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ON THE INTRAVENOUS, NOT THE INTRASPINAL, USE OF ARSPHENAMIN IN SYPHILIS OF THE NERVOUS SYSTEM *

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At this critical period of our national life it seems especially important to consider carefully the various methods of treatment of a disease that maims so often and so rarely kills. Those of us who during several decades have had unusual opportunities of studying syphilis of the nervous system realize a great responsibility in the matter of placing before the entire medical profession correct views regarding the various methods of treatment that have been proposed. A year ago I felt impelled to expound what I believed to be "The Truth about Intraspinal Injections in Syphilis of the Nervous System."[1] It is very evident that to some "The Truth" was not altogether palatable. I am more firmly convinced than ever of the correctness of my views, and in a forthcoming publication by Drs. Strauss and Kaliski[2] a careful critical study of over 400 cases from my service at Mount Sinai Hospital will be given.

Let me state briefly why we pinned our faith to the intravenous use of salvarsan, neo-salvarsan or arsphenamin, and why we are ready to reject the more dangerous intraspinal method of treatment.

OF GENERAL INTEREST TO ALL PHYSICIANS

This entire subject concerns not only the neurologists and the dermatologists; it concerns even to a greater degree the general medical practitioner. Among dermatologists, Dr. Fordyce has seen fit to reply to my article of last year. I am most anxious to avoid all personal controversy; the subject is far more important than the personages involved and it would be a grievous error to allow this con-

* From the Neurological Service at Mount Sinai Hospital, New York.

* Read at the meeting of the Association of American Physicians, May, 1918.

1. Sachs, Bernard: The Truth about Intraspinal Injections in Syphilis of the Nervous System, J. A. M. A. **69**:681 (Sept. 1) 1917.

2. Kaliski, D. J., and Strauss, Israel: On Syphilis of the Nervous System, Am. J. Syphilis **2**:609 (October) 1918.

troversy to descend to the plane of charges and recriminations. Dr. Fordyce[3] writes:

> If the statements contained in that (my) article are accepted by the medical profession as a final and correct judgment of this new therapeutic procedure (meaning intraspinal injections) an enormous amount of harm will result in that numerous victims of syphilis of the nervous system will be deprived of their only chance to regain health and economic efficiency.

Far from depriving them of their only chance for recovery, I believe that by advocating the intravenous treatment no lives will be lost, no unnecessary paralyses will result from treatment, and far less harm will be done by the innumerable number of medical men who will be called on to treat syphilis of the nervous system than if the intraspinal method were to be generally adopted and heralded as the only efficient method in the treatment of syphilis of the nervous system. The intravenous method, which hundreds of physicians have already learned to administer skillfully will, if energetically pursued, bring about results comparable with those obtained in the treatment of early specific lesions involving other organs. If there is the slightest suspicion that syphilis has invaded the nervous system, let physicians and surgeons give the intravenous treatment and give it to the extent that we have found it entirely safe to give.

VALUE OF SEROLOGIC EXAMINATIONS

Again, Dr. Fordyce implies that there was in my article an attempt to discredit the value of serologic examinations of the spinal fluid as a diagnostic measure and guide to treatment. Such an accusation is entirely unfounded. In my hospital service, all laboratory tests are utilized to the fullest extent possible. My point of view is and has been simply this: Serologic examinations and all the biologic tests are of the greatest possible value as corroborative evidence. I am not willing, however, to allow that clinical evidence is to be entirely superseded or disregarded. So many of the physicians engaged in these researches seem to forget that negative findings, serologically and biologically, do not disprove the presence of syphilis as a causative factor of disease. Wassermann himself in his earliest articles and in all others that have come to my notice, has never departed from this original statement of his.

In our own experience we have again and again, on clinical evidence, and in the absence of positive findings, given intravenous treatment when our own experience has taught us that certain groups of symptoms could only be explained on the assumption of syphilis and

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3. Fordyce, J. A.: "Truth about Intraspinal Injections in Treatment of Spinal Syphilis;" A Reply, J. A. M. A. **69**:1482 (Nov. 3) 1917.

in no other way. Moreover, I must adhere to the views previously expressed, that there is no actual correspondence between the serologic findings in certain cases of syphilis of the nervous system and the progress of the underlying morbid process. In general paresis we have, possibly as a result of energetic treatment, seen the most marked remissions without any tangible change in the serologic findings. The same is true of tabes and is invariably true of the spastic group of syphilitic disease of the spinal cord. On the other hand, we have entire lists of cases in which the serologic findings show remarkable changes after intravenous injections, after repeated lumbar punctures, without corresponding improvement or deterioration in the clinical symptoms. It is only in the group of the more distinctly specific meningeal disorders and meningo-encephalitic disorders and in some of the vascular group that the serologic findings and the clinical symptoms seem to progress or to deteriorate *pari passu*.

AUTHOR'S OBSERVATIONS

Taking up this subject somewhat more in detail, my associates and myself have endeavored to discover why the intraspinal treatment did not yield the results expected of it and why intravenous treatment in reality accomplished much more than we had a right to anticipate. Although my friend, Dr. Fordyce, waives aside all attempts at theory by assuring us that his patients have been cured and relieved by intraspinal treatment when intravenous treatment had failed, and that they would smile at the thought that successful treatment was theoretically impossible, I believe it not amiss to state once more a few fundamental facts regarding the limitations of the intraspinal treatment of syphilis of the nervous system. I grant that in view of the excellent results obtained in the acute infectious disorders of the central nervous system and recorded by Flexner and his associates, the thought was entirely natural that similar results should be obtained in syphilitic disease. But there is a vast difference between the acute infectious disorders and the more chronic syphilitic disease dependent on the difference in the manner of invasion in the toxic products formed and in the final habitat of the respective micro-organisms.

In general paresis and in tabes the chief lesions are within the substance of the brain or of the cord far removed from actual contact with the cerebrospinal fluid. It is for that reason almost impossible to bring the spirocheticidal remedy into immediate contact with the foci of disease unless these remedies can be introduced through the blood streams. It is only in the earliest stages of tabes dorsalis that the disease, as we have long since known, involves the meninges and the spinal ganglia; later on it sets up marked degenerative changes in

the spinal tissue, and these secondary changes are entirely beyond the reach of the cerebrospinal fluid and its contents. In the remaining meningo-encephalitic and meningo-myelitic processes of specific origin, more or less exudative in character, we would suppose that spirocheticidal substances introduced in the cerebrospinal fluid might have an active therapeutic effect if such substances could course freely in the cerebrospinal fluid and if it could be shown that they were retained in this fluid for any satisfactory period of time. Let me refer here once more to the fact that four years ago, with the assistance of Professor Benedict, we succeeded in showing that salvarsan introduced in the usual quantities into the blood current appeared in the cerebrospinal fluid in appreciable quantities. In this way we refuted the doctrine of the impermeability of the choroid plexus and that salvarsan introduced intravenously could not be expected to exert any influence over the cerebral and spinal tissues. The question, therefore, narrowed itself practically to this: Whether or not as much spirocheticidal substances — for example, arsphenamin — reached the cerebrospinal canal in intravenous treatment, as it was safe to introduce directly into the cerebrospinal fluid by lumbar puncture.

CIRCULATION OF THE CEREBROSPINAL FLUID

I appreciate the ingenious methods which have been elaborated by Ravaut, by Swift and Ellis, and by Ogilvie,* but further studies on the functions and the behavior of the cerebrospinal fluid seemed to have made these methods more or less superfluous. It will not do to disregard the studies of Weed, a pupil of Cushing, who pointed out that the pressure in the cerebral capillaries is considerably higher than the cerebrospinal tension, and that it is "far more likely that fluid leaves the cerebral capillaries and circulates in the capillary and perineuronal spaces yielding nourishment and receiving waste products, and finally leaving the tissues by the pericapillary and perivascular spaces to the subarachnoid cavities over the surface whence absorption into the venous sinuses takes place." The natural inference of these various studies is that a metallic substance like arsphenamin introduced into the spinal canal is rapidly absorbed into the venous system, and if this be true, why not utilize the venous system at once for the conveyance of these metallic substances rather than the roundabout route via the cerebrospinal fluid. It has also been shown that the cerebrospinal fluid circulates imperfectly and that there is very little absorption of this fluid by the cortical or spinal cells.

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* Full references to the literature will be found in the abstract by Kaliski and Strauss.

However attractive the intraspinal medication has appeared to be, it is essentially useless and theoretically unsound. British authors, among them Halliburton,[4] have abandoned the use of arsphenamin in locomotor ataxia and similar late syphilitic affections via the cerebrospinal fluid because they claim it is fatal not only to the syphilitic organism but also to the patient. There is some satisfaction, also, in noting that Major Swift[5] in an article written abroad now concedes that he never contended that intraspinal treatment alone was the best or the ideal treatment of syphilis of the nervous system, and I am firmly convinced that men like Swift, who surely appreciate physiologic evidence, will grant that thus far the argument is against intraspinal and in favor of intravenous treatment.

ANOTHER REASON FOR ADOPTING THE INTRAVENOUS METHOD

There is still another reason why we have been practically compelled to adopt the intravenous method exclusively in the treatment of syphilitic disease of the central nervous system. Dreyfuss was, perhaps, the first to insist on the frequent repetition and the large doses of salvarsan to be used in these disorders. What his present-day views are we have no means of knowing. Starting out with that suggestion, we have in my own service, become more and more convinced of the value of intensive treatment, especially in the earlier and remedial stages of cerebral and spinal syphilitic disease. We have obtained most satisfactory results from intravenous injections administered on alternate days for a period of three to four weeks according to the symptoms presented by the patient, and then allowing a period of complete rest or giving weekly or semi-weekly injections of salicylate of mercury for a period of four to six weeks and then again starting in with the same course of arsphenamin injections. Some of our patients have received as many as forty or fifty intravenous injections within a period of a year or eighteen months. There may be a few men who could with impunity give the same number of intraspinal injections, but the patient will certainly be none the better for them and even the most skillful of the intraspinal injectionists have had disagreeable experiences to record. Personally, I regard the lumbar puncture as a more or less innocuous procedure provided fluid only is withdrawn, but I have too much respect for the cerebrospinal content to sanction innumerable injections of toxic substances into the canal.

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4. Halliburton, W. D.: The Possible Functions of the Cerebrospinal Fluid, Brain, Lond. **39**:213, 1916.

5. Swift, H. A.: Intraspinal Treatment of Syphilis of the Nervous System, J. A. M. A. **59**: 2092 (December 22) 1918.

DEFINITE RESULTS USUALLY OBTAINED

The medical profession are entitled to know what the actual results are from the use of intravenous medication. Let me summarize my beliefs by stating first that no other specific medication has ever been as satisfactory as has been the intravenous use of arsphenamin. Wherever there is good reason to suspect that the symptoms of nervous disease are due to the specific poison, the antisyphilitic medication should be begun as early as possible and persisted in as long as possible. The very best results will, no doubt, be obtained in those cases in which the anatomic pathologic lesion is relatively slight and young. In the cases of intense headaches, probably meningeal, in some of the earliest forms of specific optic neuritis, in the large number of cases of cerebrospinal syphilis with actual nerve palsies with moderate paralytic symptoms, with incomplete vesical disturbance; in the victims of vascular disease, in arteritis luetica, and above all, in a rather important group of syphilitic epilepsies, intensive intravenous treatment leads not infrequently to a cure and very often to a marked improvement in all the symptoms. But in this group of cases it is easy for us to realize that the morbid process is largely confined to the meninges and to the surface of the cortical or spinal tissue, but the spirochete can no doubt be reached through vascular channels.

A group of purely spastic palsies with very slight sensory changes, with little or no vesical disturbance, with much more rigidity than paralysis, the group which Erb so well described and which is long since recognized as a purely degenerative group, yields least to intravenous or to any other forms of antisyphilitic medication. The question of the effective treatment is most in doubt when we come to consider the results in locomotor ataxia. And here you will pardon me for saying that only those who have had a vast experience in the observation of tabes are able to speak with any sort of authority.* The tabetic pains, the crises, the bladder symptoms, and the sexual impotence, which Fordyce especially advances in his effort to prove that he is curing his patients of tabes by the intraspinal method — all these conditions may be relieved by antisyphilitic medication as we have known them to be relieved by prolonged periods of rest, by hydrotherapeutic procedures, by mercurial injections, by almost any other method of treatment that has from time to time been advocated for the treatment of tabes dorsalis.

SUPERIORITY OF INTRAVENOUS MEDICATION

My own impression based on the large number of cases that we have had under treatment, is that the early and persistent use of

* It might be well to remind some recent writers that ripe judgment in matters neurological does not come by intuition; it has to be acquired.

arsphenamin intravenously administered, makes the entire course of the disease far less progressive than it was formerly wont to be. It is no exaggeration to state that in innumerable cases we appeared to check the progress of the disease. It has been a special source of chagrin to me, therefore, to note the rapid deterioration of symptoms in some of the cases of locomotor ataxia that have done extremely well on intravenous treatment, and after intraspinal medication administered by others and not by us, have developed paralytic symptoms and absolute impairment of the vesical function when there was no reason whatever to expect these symptoms to be superadded to the many others. Aside from this no one can claim that he has actually brought about a single and definite cure in an undoubted case of tabes dorsalis. There are cases of lues cerebrospinalis that simulate tabes as there are others that simulate general paresis in which there may be a return of the knee-jerk or even a change in the pupillary immobility, particularly in the earlier stages, subsequent to the introduction of arsphenamin into the system; but in a full-fledged case of tabes dorsalis no one has ever been able to record the actual disappearance of the classic symptoms of the disease.

Very much the same that we have said regarding tabes dorsalis might be said regarding general paresis, except that there is in the case of general paresis the added difficulty of estimating the value of any form of medication because of the natural remissions of the disease. The sober judgment based on sufficient experience might lead the therapeutic enthusiast to claim that the remissions are longer than they used to be, that the disease lasts longer than it did in former years. I would not contradict the truth of such statements. In a disease so grave as general paresis it is my ambition to remain optimistic so long as there is the slightest encouragement. Moreover, there is in the earliest period of a very large number of cases of general paresis a reasonable doubt as to the actual disease and we speak of these cases as being doubtful as to whether they are genuine general paresis or whether they are pseudo-paresis which nine times out of ten means nothing else than that in some instances the syphilitic disease may remain restricted to the meninges and to the superficial layers of the cortex, whereas in other cases the disease makes further inroads into the cortical tissue and the spirochetes find their ultimate and permanent resting places within the substance of the brain. So long, however, as there is any doubt regarding the actual development of the disease, it is the duty of every one, particularly in the earliest stages of the disease, to give the most intensive form of intravenous treatment and only to desist when the progress of the symptoms has been such that it is certain that the disease will have to run the usual unfavorable course.

PRACTICAL DEDUCTIONS

The chief practical deduction from these experiences is that the most intensive intravenous treatment should be given as soon as possible after the initial specific infection has been established. Without reference especially to the nervous system, let the most intensive treatment be given so as to avoid later complications. From the frequency with which pupillary immobility can be recognized as the only clinical symptom of constitutional syphilis, I am inclined to think that the nervous system is more often involved in constitutional syphilis than it is generally suspected to be.

In view of the fact that we have observed, particularly in youthful and also in senile individuals, the very early development of syphilitic disease of the central nervous system in spite of intensive intravenous medication, it is well to urge as a measure of safety that the intravenous medication of arsphenamin cannot be begun too early if the ravages of the disease are to be minimized. The future of the success of antisyphilitic therapy lies in the hope that the profession at large will insist on this form of treatment in every case of syphilitic infection for a number of years after the initial lesion. And so far as the interests of society at large are concerned, there is a crying need, especially in our large cities, for the adequate intravenous treatment of all patients with the initial syphilitic lesions. Such patients should unquestionably be kept under absolute medical control for a number of years. Further hope lies in the ultimate discovery of a substance less toxic than arsphenamin which in even larger quantities could be introduced, and safely introduced, into the circulation.

HISTOLOGIC EVIDENCE OF THE PATH OF INVASION OF THE BRAIN IN GENERAL PARESIS

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A topographic survey of the brain in cases of general paresis shows that, in the majority of cases, the brunt of the attack is borne by the frontal pole and the anterior parts of the convexity, while the occipital pole is relatively free. In 1913, the writer made a comparative histologic study of six areas from each hemicerebrum of the brains of fifty cases of paresis and found that the areas of most severe involvement, in the majority of cases, were those supplied by branches of the internal carotid artery. In a smaller number of cases the lesions were widespread and of about equal severity. Cases have been recorded with the maximum damage in the occipital region, that is, the area of distribution of the basilar system and with little or no involvement of the anterior portions of the brain. Apparently in the majority of cases the lesions are more or less strictly confined to areas served by the carotid system; in very rare cases, to that supplied by branches of the basilar artery, while in a considerable number both zones are involved.

HISTOPATHOLOGIC APPEARANCES

Paresis is one of the few mental diseases in which the diagnosis can be confirmed by histopathologic examination, and it is by means of this examination only that the diagnosis can be established with sufficient accuracy for careful scientific analysis. The criterion on which such diagnosis rests is not the destruction of the brain parenchyma, but the widespread perivascular accumulations of lymphocytes and plasma cells. The parenchymal changes are often severe, but they are not pathognomonic, and most typical cases of paresis will show areas of advanced vascular lesions with little or no demonstrable damage to the essential nerve tissues, while in very early cases the amount of damage to the brain structures may be very slight in comparison to the degree of perivascular infiltration.

These two points: (1) That the distribution of the lesions follows roughly one or the other or sometimes both of the main cerebral vascular stems, and (2) that the perivascular changes within the brain are at least as widespread as the parenchymal damage and frequently more so, has led to the conclusion that the path of invasion by the spirochetes is along the perivascular lymphatic channels and the meso-

dermal tissues of the perivascular spaces — that is, that general paresis is essentially a perivasculitis with focal invasive spread to the brain parenchyma. This has suggested observations on the larger cranial vessels before they enter the brain mass, and material from nine cases of paresis has been studied with this point in view. The material in some cases was taken from the intracranial but extracerebral portions of the carotid and basilar arteries and in some from the carotids in the neck.

CHARACTER OF THE LESIONS

The lesions encountered naturally fall into two groups: (1) those in which the process is evidently stationary, and (2) those showing evidence of progressive chronic inflammation. The stationary lesions are comparable in every respect to those of healed syphilitic endarteritis. The endothelium is intact, but between it and the elastica is in many places a fairly thick mat of loose-meshed but very well preserved connective tissue which marks the site of earlier endothelial proliferation. The elastica often shows the fibrillation which occurs in syphilitic arteritis, and not infrequently there is a suggestion of the formation of new elastic laminae in the connective tissue scar. These lesions agree with the criteria usually accepted as differentiating syphilitic vascular disease from the other types of arteriosclerosis — that is, splitting of the elastic lamina with separation of the intima and media by a connective tissue scar in which the cell and fiber elements are well preserved and which shows little or no alterations of a degenerative character.

It must be borne in mind that these lesions, while corresponding nicely with those of healed cases of arteritis of established syphilitic origin, do not in themselves offer definite proof of their own etiology. Lesions of this type were found in varying grade in eight cases of the series of nine, and with the known syphilitic infection of all paretics I think it fair to conclude that these patients had suffered with varying degrees of syphilitic arteritis of the cranial vessels during the earlier stages of the syphilitic infection.

The active chronic inflammatory lesions consist in a lymphocyte and plasma cell exudate in the perivascular connective tissue sheath — the adventitia — which is quite comparable with that of the vessels within the brain substance, although the plasma cells are a little less numerous and apparently do not tend to mass together into the mosaics seen around many smaller arterioles in the cortex. Such exudates were observed in eight of the nine cases. In one case, in addition to this cellular infiltration, one very small vessel traveling in the adventitia of the carotid in the neck showed the reduplicated succulent swollen endothelial cells which are found in the acute stages of syphilitic endarteritis as shown in the accompanying illustration.

The heavy dark mass at the bottom of the illustration is the wall of the carotid artery. The small vessel in the middle shows swollen and reduplicated endothelium, and the surrounding connective tissues are infiltrated with lymphoid and plasma cells.

FREQUENCY OF OCCURRENCE

Syphilitic aortitis is known to be common in paretics. And the lesions here are quite comparable in their type to those of the cranial vessels though modified somewhat by the different anatomic conditions. The presence of perivascular lesions in the cranial vessels in their extracerebral course supports the hypothesis of the invasion of the brain by way of the periarterial lymph spaces, and our *envisagement* of the disease-process as a whole would then be that of a persistent vascular infection with a very even balance between the invasive power of the parasite and the resistance of the host lasting over a number of years, which constitute the incubation period of paresis, with ultimate invasive spread in multiple small foci to the brain parenchyma.

The even balance between attack and defense is an essential in determining the long latent period (from six to twenty years), and is supported by the claim of Fournier and the statistical work of Pilez and Mattauschek that paresis is much more apt to occur in cases of *mild* infection. That the final invasion of the brain takes place in multiple foci is apparent from the clinical course of the disease with its many variations, fugacious paralyses and aphasias and frequent improvement or even complete remissions, and this is well supported by the occurrence of nests or clusters of spirochetes in the brain tissues. There is little difficulty in demonstrating the organism either by the dark-field microscope or in stained specimens if one of these active colonies be encountered, but one may often search over large areas of the brain even in advanced cases without finding such a focus. Marinesco has pointed out that when an apoplectiform attack has accompanied death, thus indicating an exact area for examination, the organism can be demonstrated with great constancy.

Granting the focal character of the lesion it is obvious that the clinical picture will depend on at least two factors: (1) the locus, and (2) the irritative or destructive nature of the invasion. The manic forms of many early cases — hallucinosis and convulsions — suggest the irritative or discharging lesion, while permanent paralyses, aphasias and the progress of dementia are the results of a destructive process.

SUGGESTIONS AS TO METHOD OF TREATMENT

The consideration of paresis as essentially a vascular disease might at first sight be considered as an indication for the intravenous method of arsphenamin therapy as contrasted to the intraspinal and intracerebral, and while the writer still considers this the method of choice it must be remembered that the perivascular spaces are separated from the blood stream by the same very efficient filter — the cerebral

vascular endothelium — as are the brain structures themselves. If, however, we accept the hypothesis that paresis is the terminal stage of a latent or very slowly progressive cerebral arteritis comparable to the cavitation stage in tuberculosis, prophylactic treatment in the form of "follow-up" treatment of syphilitics and intensive treatment of those cases which are occasionally encountered of so-called "laboratory paresis" without psychosis offers much greater promise. This, of course, falls for the most part without the province of the neurologist and psychiatrist and in the hands of the dispensary worker and the general practitioner, but the emphasis on the need of consistent therapy must come from the specialist.

ON THE ASSOCIATED INCIDENCE OF SYPHILIS OF THE CENTRAL NERVOUS SYSTEM AND CARDIO-VASCULAR SYPHILIS *

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That syphilis plays an important rôle in the causation of aortic aneurysm and aortitis had been long suspected. Weil thought that every case of fibrous aortitis was due to syphilis. Groen studied 306 cases of visceral syphilis and found vascular changes in 76 per cent. of the men and 49 per cent. of the women. Schultze holds syphilis to be the cause of aortitis in practically all cases. Hampeln says, "A definitely diagnosed, circumscribed aneurysm permits the assumption of luetic infection, eight to twenty years previously." Etienne believed 70 per cent. of all aneurysms to be syphilitic in origin; Gerhardt put the percentage at 53, and A. Frankel at 55. The pathologic work of Doehle, Heller and his pupils, Stadler, Chiari, Benda, Marchand and Eich in Germany; of Mitchell Bruce in England, and the clinical studies of Huchard and Dieulafoy in France, have emphasized the syphilitic origin of aortitis and aneurysm. In this country, Cummer and Dexter, Epstein, Held, Longcope, Symmers, Wallace and McCaskey have made contributions to this subject.

That tabes is of syphilitic origin was emphasized by Fournier and Erb. The latter asserted that 88 out of 100 tabetics were syphilitic. Berger thought 20 per cent. of tabetics were syphilitic. Westphal put the percentage at 33, Remak at 23, Rumpf at 66. Eisenlohr at 52.5, Bernhardt at 60, Fournier at 93, Dejerine at 90, Strümpell at 90. Quincke and Moebius assert dogmatically that every tabes is the result of syphilis. Barker (in Monographic Medicine) says: Tabes is due to syphilis while Dana puts syphilis as the important and essential cause. Starr maintains that 90 per cent. of the cases are due to syphilis; he calls it, however, parasyphilis because it follows syphilis and is not cured by antisyphilitic therapy.[1]

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* Read to the Section in Medicine, New York Academy of Medicine, Jan. 15, 1918.

1. This, however, does not seem a valid argument to us. Hepar lobatum is also incurable, yet no one speaks here of paralues. We cannot cure scars or sclerosis, especially in the nervous system.

Formerly Jews were relatively free from tabes. Now with increasing exposure to infection due to the breaking down of the religious barrier, tabes is quite common among them; this illustrates the etiologic importance of syphilis. The inoculation of rabbits with syphilis by means of cerebrospinal fluid taken from cases of early central nervous syphilis has been accomplished by Uhlenhuth and Mulzer, Hoffman, Nichols and Hough, Kleiner, Volk, Arzt, Kerl and Mattauschek, Marinesco and Minea, Frühwald and Zaloziecki, Reasoner, Dohi and Tanake, Graves, Wile and others.

With the demonstration by Noguchi and Moore of the spirochetes in the brain of general paretics and, though more rarely, in tabes, the confirmation of these findings by Marinesco, Marie and Levaditi and the demonstration of specific changes in the cerebrospinal fluid in syphilitic infections of the central nervous system, we may say with Erb that so-called *meta* or *para* syphilis is syphilis, and only the variations in maximum localization of the process produce the clinical pictures we know.[2] That the heart is frequently involved early has been shown by Brooks, and the early involvement of the meninges is shown in the characteristic changes in the spinal fluid present in the second stage of syphilis. This was first shown by Dreyfus and later confirmed by many other observers.

FREQUENT ASSOCIATION OF SYPHILIS OF THE CARDIOVASCULAR AND NERVOUS SYSTEMS

The frequency of the association of cardiovascular and central nervous syphilis was not noticed until Berger and Rosenbach, in 1879, called attention to the coincidence of tabes and aortic regurgitation. They reported seven cases, but did not emphasize the relationship between the two conditions. Charcot, too, had noted this coincidence, and Vulpian had spoken of anginal attacks occurring during the course of tabes without explaining the association. They both agreed that the cardiovascular lesions came on late in tabes — a fact to which Stadler also called attention.

Letulle observed that tabes frequently was associated with cardiac lesions, especially aortic regurgitation. His first case came to postmortem. There was degeneration of the posterior columns and atheroma of the aorta and the cerebral vessels. The aortic valve was thickened and retracted. The second case showed a double aortic lesion and tabes. He thought chronic arteritis was the underlying cause of both conditions, and significantly concludes, "If a cardiac lesion is present in tabes, it is generally aortic regurgitation. Both

2. Warthin has emphasized the essential uniformity of the pathologic changes in all forms of syphilis.

are due to a common cause, namely, chronic arteritis." Colgahoun reported two cases of tabes with aortic regurgitation, but thought the tabetic pain caused the aortic regurgitation, and that possibly the vagus played a rôle or that circulatory changes in the cord might contribute to the tabetic condition.

Leyden wrote of anginal attacks and cardiac asthma in tabes and assumed trophic changes in the valves as the cause of aortic regurgitation. In one case of what must have been conjugal syphilis he explained the occurrence of an aneurysm in the wife of a tabetic as having been due to cardiac strain as a result of the wife's nursing her tabetic husband. Balacakis found three cases of aortic regurgitation among fifty-five tabetics, but was not impressed by their association, ascribing the valvular lesions to rheumatism. In reporting two cases Grasset thought tabes was the primary condition and the cardiac lesion due to painful crises. He also thought that the cardiac lesion had long been latent. In the first edition of his text book (1884). Strümpell spoke of the common origin of the two conditions. In a case of Oppenheim's the necropsy revealed tabes, atheroma of the aorta and of the cerebral vessels, and an incompetent aortic valve.

Fournier, Grasset and Letulle thought that on the whole aortic disease was rare in tabes while Charcot, Vulpian and Raymond speak of the relative frequency of the association. With more recent pathologic studies, the view, ascribing both tabes and aortic disease to syphilis, gained ground, and this hypothesis easily explains their coincidence.

Ruge and Huttner found nine cases of aortic regurgitation among 138 tabetics. They conclude: "Those tabetics who develop cardiac disease have it chiefly at the aortic valve. The coincidence of tabes and aortic disease is due to a common cause — lues." Nordmann reviewed the reported cases up to 1894, and found 134 cardiacs among tabetics, 65 being cases of aortic disease. The other 69 involved other orifices alone. He also reported 8 cases of aortitis among 100 tabetics. Schuster found three cases of aortitis among 22 tabetics, and Marie one cardiac to four or five tabetics, most of them with disease of the aortic valve. Hertz examined 98 tabetics and found six cases of aortic regurgitation, two of aneurysm and 16 cases of dilated arch with carotid heaving, elevation of the right subclavian artery, pulsation in episternal notch and inequality of radial pulses In 50 per cent. of his cases of cardiac disease, among tabetics the aorta was involved. In another series he found 48 cases of aortic regurgitation among 76 tabetics with cardiac disease.

Bouveret heads one of his contributions to this subject as follows: "Syphilis-ataxie cardiopathie"— a suggestive title. Enslin reported

seven cases of tabes with aortic insufficiency, and Friedrich Müller a case of aortitis and tabes. There was a to and fro aortic murmur, enlargement of the heart, and at the same time, miotic fixed pupils and ataxia. F. Lesser collected eighteen cases of aortic aneurysm among ninety-six cases of tabes which came to necropsy, and Barthelemy (quoted by Guilly) reported seven cases of tabes with aortic disease.

Guilly reasons as follows: Syphilis is frequent in tabes; it also causes aortitis; hence aortitis and tabes probably have the same etiology, namely, syphilis. He reports thirty-three living patients who have general paresis with ten cases of aortic disease among them, and 200 cases of general paresis which came to necropsy. Forty-one of the latter showed evidence of aortic disease, aortitis, changes at the valve, atheroma. These taken together make a total of fifty-one cases of aortitis among 233 cases of general paresis, that is, one case of aortitis, aortic regurgitation or aneurysm to five cases of general paresis. Aortic regurgitation was the most common lesion during life, and when nothing was found clinically the changes were present at necropsy. As a result of his own studies and a review of the literature, he concludes that aortitis is frequent in the course of tabes. Frequently there is cardiosclerosis with irregularity of rhythm. In general paresis, aortitis is present in about 20 per cent. of the cases, chiefly in the young (under 45), and probably due to syphilis.

Rogge and Mueller think that the frequency of this association and its clinical significance are not sufficiently appreciated. Usually one of the two conditions dominates the clinical picture; the symptoms and signs of the latent condition must be carefully elicited. Tabes in a case of aortitis may be very mild. Guilly and Strümpell also note this point. Our own observations confirm the statement. Strümpell speaks of rudimentary tabes. Rogge and Mueller found eight cases of cardiovascular disease among twenty-two tabetics. This percentage is rather high. The average is about from 10 to 20 per cent. In twenty-four selected cases showing this association, the most frequent lesion was aortic regurgitation or aortic regurgitation and obstruction. In 15 per cent. of the twenty-four there were tabes and aortic disease, and in nine there were tabes and aneurysm. Most showed evidences of myocardial degeneration and premature atherosclerosis. In only 58.3 per cent. were there definite cardiac complaints. The cases of sudden death reported in tabes are probably due to sudden dilatation from myocardial degeneration, coronary thrombosis or rupture of an aneurysm. In nine of these cases there was definite evidence of syphilis and in ten others it was probable. In only two was there a history of polyarthritis. "Rheumatism" in these cases usually means

tabetic pain. Seven of the twenty-four patients were women. The average age was about 40. (Bittorf found the average age in non-syphilitc aortic sclerosis to be 55.) The cardiovascular symptoms come later than the nervous phenomena, according to Rogge and Mueller, about four and one-half years later. A lesion in the cord will give symptoms much earlier than one in the aorta. More recently L. Braun reported 103 cases of general paresis with twenty-three certain and five probable cases of aortitis among them. Nobel reported the case of a boy showing aortic regurgitation, with unequal, fixed pupils, exaggerated knee-jerks and ankle-jerks, with dementia, speech disturbance and a positive Wasserman reaction. E. L. Hunt, in the course of an article entitled "Complications of Tabes," mentions the occasional occurrence of aneurysm or aortitis without, however, citing any cases. Dana in the latest edition of his textbook speaks of cardiac crises in tabes, that is to say, dyspnea and angina-like attacks. Starr found nine cases of aortic murmur in 126 cases of tabes, and Levinson has mentioned this association.

SYMPTOMS USUALLY MILD

Tabes in a case of vascular syphilis usually is mild. The pupils may be miotic, rigid, unequal and irregular. The Achilles jerk, alone, may be lost. Hypotonus may be present even in cases with exaggerated knee-jerks and as a result, tabetic flat-foot. There may be girdle sensation zones of hypoesthesia-radicular in type, lancinating pains, gastric crises. Frequently there is retention of urine—another evidence of sacral tabes. Patients will say with a great deal of pride that they can hold their water all day. The Abadie symptom—loss of sensitiveness of the biceps tendon or tendo Achilles to pinching—is a common early sign. There may be ulnaris hypoesthesia. Goodkind described hypoesthesia of the anus and urethra.

On the other hand, cardiac symptoms in a case of tabes or general paresis may be scanty. The absence of history of rheumatic fever or other infectious disease in case of aortic regurgitation, the localization of the murmur, chiefly in second right interspace,[3] and the occurrence of aneurysm in the young are suggestive evidence of cardiovascular syphilis and evidence of this disease should be looked for.

In radiographic examination, aneurysmal bulging may be seen in the first oblique diameter, encroaching on the so-called retrocardiac

3. The murmur of syphilitic aortic insufficiency frequently is loudest in the second right space and not at Erb's point where endocarditic aortic insufficiency usually is best heard. This is said to be due to changes in the wall of the aorta which cause better transmission to the superficially situated ascending aorta.

space. Every case of tabes should be examined radiologically and if possible electro-cardiographically to determine changes in the cardiac musculature to which Brooks in this country first called attention. Usually, as outlined above, one of the two conditions dominates the clinical picture. This may be due to variations in tissue or strain affinities (Reasoner). The spirochetes seem to exert their maximum effect in one system without completely neglecting the other. So patients with myocardial changes occurring early in life — with dyspnea, anginal attacks, palpitation, cough, slight edemas — should be examined for signs of tabes. Careful neurologic examination may illuminate obscure visceral lesions. For example, a fixed pupil may clear up the syphilitic origin of an obscure liver affection, and a lost Achilles jerk may indicate that a stomach syndrome is a gastric crisis. We are fortunate in being able to corroborate our diagnosis by serologic tests, but we must express our admiration for the host of clinicians who could draw accurate conclusions without laboratory aids.

AUTHOR'S OBSERVATIONS

My own observations were made first on fifty cases of tabes at the Central Neurological Hospital, New York City. Those with definite rheumatic history were excluded. There were seven cases of cardiovascular syphilis among them. One other case showed at the same time an uncomplicated aortic insufficiency and left-sided cerebral thrombosis with motor and sensory paralysis, astereognosis, motor aphasia, and mimic facial palsy. Concerning this case we could not say definitely whether the cerebral lesion was due to embolism from the diseased aortic valve or to autochthonous thrombosis. The absence of evidence of embolism anywhere else and the stationary character of the valvular process would seem to point to the latter.

ILLUSTRATIVE CASES

CASE 1.—Man, aged 51, contracted syphilis eighteen years ago. Circulatory: Aortic regurgitation; aortitis; Corrigan pulse. Nervous: Pupils, unequal—left smaller and sluggish to light; knee jerks only with reinforcement; ankle-jerks, absent; Abadie's sign, positive; ulnaris hypesthesia; cochlear and vestibular function lost on the right; undue retention of urine; impotence. Serologic: Blood Wassermann, ++.

CASE 2.—Man, aged 42, became infected with syphilis twenty years previously. Circulatory: Diastolic murmur at apex; to and fro murmur at Erb's point and second right interspace; Corrigan pulse; manubrium dulness; pulsation in episternal notch. Nervous: Pupils, fixed; hypotonus; knee-jerks and ankle-jerks, absent; Romberg sign, positive; incontinence of urine. Serologic: Blood Wassermann, +++.

CASE 3.—Man, aged 33, was infected with syphilis fourteen years ago. Circulatory: Cardiac asthma; decompensation; no murmurs (even after return of compensation); arrhythmia. Arrhythmia not altered by injection of atropin (myogenic). Nervous: Pupils were unequal, miotic and irregular, sluggish to light; ankle and knee jerks, absent; hypotonus; Romberg sign, present; undue retention of urine; Abadie's sign, positive; vibratory sense, absent. Serologic: Spinal fluid was weakly positive.

CASE 4.—Woman, aged 49, had syphilis. She was well up to three years ago when she had pain in the left leg and had to watch her feet. Later there was pain in her right leg with numbness and tingling and she was unsteady on her legs. Circulatory: Systolic murmur in aortic area transmitted upward into vessels of the neck; dulness over manubrium; pulsation in episternal notch. The roentgen ray revealed a dilated aorta. Nervous: Pupils, equal, Argyll Robertson; pallor of left disk; deep muscle and joint movement sense, impaired in all extremities; vibration sense lost; ataxia; knee and ankle jerks, absent. Serologic: Wassermann on blood and spinal fluid was negative; fluid showed increase of globulin and 22 lymphocytes to the cubic millimeter.

CASE 5.—Woman, aged 43, with no history. Circulatory: Systolic murmur in aortic area, transmitted upward; dilatation of ascending aorta. Nervous: Pupils, fixed; ankle jerks, absent; bladder symptoms. Serologic: Blood Wassermann, + +.

CASE 6.—Woman, aged 44, had been a prostitute. Circulatory: Systolic murmur in aortic area; loud diastolic at Erb's point and second right interspace; pulsation in episternal notch. Roentgen ray revealed a dilated arch especially at junction of transverse and descending aorta. Nervous: Argyll Robertson pupils; Romberg sign, present; knee-jerks, absent; radicular anesthesias. Serologic: Both Wassermann tests, positive.

CASE 7.—Woman, aged 40, gave no history. Circulatory: Aortic systolic murmur; very loud aortic second sound without elevation of blood pressure. Diffusely dilated arch, especially ascending aorta. Nervous: Argyll Robertson pupils; knee-jerks, absent; Romberg, present; ataxia; bladder symptoms. Serologic: Both Wassermann tests were weakly positive; increased globulin in spinal fluid and 24 cells to the cubic millimeter.

COMMENT

There were two additional cases in this series, but their respective ages were 55 and 57, and they both showed hypertension. Since in these cases dilatation of the arch of the aorta and aortic murmurs may have been the result of simple atherosclerosis without syphilis, we did not include them in our series.

We have recently been able to observe forty cases of syphilis of the central nervous system, admitted to the Third Medical Division of Bellevue Hospital. Among these there were seven cases of cardiovascular disease affecting chiefly the aorta.

CASE 8.—Man, aged 53, had a chancre twenty years previously. Circulatory: Heart displaced downward and to the right; very loud aortic second sound. The roentgen ray revealed an aneurysm of the descending aorta with distortion of cardiac outline. Nervous: Pupils were miotic and fixed; knee and ankle jerks, absent. Serologic: Blood Wassermann, ++.

CASE 9.—Man, aged 42, had a chancre when 26 years old. Circulatory: Systolic murmur in aortic area; metallic ringing aortic second sound. The roentgen ray revealed a diffusely dilated arch. Nervous: Pupils were miotic and fixed; knee and ankle jerks, absent; hypotonus; undue retention of urine; sensory changes; genu recurvatum; marked ataxia. Serologic: Both Wassermann tests, ++.

CASE 10.—Man, aged 46, had a chancre twenty years previously. Circulatory: Myocardial insufficiency with decompensation; dilated arch. Also large nodular liver, after return of compensation (hepar lobatum). Nervous: Pupils were irregular and sluggish; knee and ankle jerks were much diminished. Serologic: Blood Wassermann, ++++.

CASE 11.—Man aged 51, had a chancre thirty years ago. Circulatory: Aneurysm of common carotid artery; metallic aortic second sound; valvular first sound of heart; blood pressure, 140/90; large nodular liver; dyspnea. The roentgen ray revealed a widening of the aorta especially in the descending portion of arch. Nervous: Pupils were small and sluggish to light; ankle jerk, absent; incontinence of urine. Serologic: Blood Wassermann, +++.

CASE 12.—Man, aged 38, had a chancre ten years ago. Circulatory: Apex beat was in the sixth space in the anterior axillary line; double aortic murmur; dulness over manubrium; pulsation in episternal notch; throbbing carotids; Corrigan pulse; systolic tone in vessels; systolic thrill in aortic area. Nervous: Pupils were unequal, both Argyll Robertson; ptosis of upper lid; ankle jerk very much diminished; undue retention of urine. Serologic: Not studied.

CASE 13.—Man, aged 36, denied that he had syphilis. Circulatory: Double aortic murmur; systolic murmur transmitted into vessels of the neck. The roentgen ray revealed a diffuse dilatation of the arch, especially marked in transverse portion (fusiform aneurysm). Nervous: Basilar meningitis involving the fifth, seventh and eighth nerves on the left; knee and ankle jerks were absent. Serologic: Blood Wassermann, ++; spinal fluid, globulin increased, 1,000 cells to the cubic millimeter.

CASE 14.—Man, aged 53, denied syphilitic infection. He had had anginal attacks for two years. Circulatory: Double aortic murmur with visible diffuse pulsation; dulness of upper sternum. The roentgen ray revealed a dilated arch. Nervous: Pupils were irregular, very sluggish to light; hypotonus; knee and ankle jerks were absent. Serologic: Blood Wassermann, ++++.

Finally I have selected several cases from my own records which illustrate this association. Out of a total of thirty-five cases of syphilis of the central nervous system, there were five cases showing coexisting cardiovascular syphilis.

CASES OBSERVED PERSONALLY BY THE AUTHOR *

CASE 15.—Man, aged 44, denied that he had syphilis. He complained of "fainting spells," loss of memory, mental deterioration, that he was clumsy and awkward in his work (that of plumber) for last year. Circulatory: Systolic murmur in the aortic area; blood pressure, 140/100. The roentgen ray revealed a very much dilated aortic arch. Nervous: Pupils were miotic and fixed; weakness of the right lower facial; tongue deviates to right; deep reflexes exaggerated on the right, abdominals diminished; dysarthria; motor aphasia (?); tremor of face and tongue. Serologic: Blood Wassermann, + +.

CASE 16.—Man, aged 57, had syphilis sixteen years previously. Circulatory: To and fro murmur in aortic area; much diminished aortic second sound; right radial showed less pulsation than left; blood pressure, 140/70. The roentgen ray revealed a dilated aorta. Nervous: Pupils were very sluggish, miosis; knee jerks increased; Babinski sign on the right. Mendel-Bechterew and Rossolimo, positive on both sides; abdominalis diminished; tremor in right facial; mental changes; speech defect; vertigo. Serologic: Blood Wassermann, + + + +; spinal fluid showed the globulin increased 35 cells to the cubic millimeter; Wassermann reaction, + +.

CASE 17.—Man, aged 50, denied that he had syphilis. He had dyspnea for some time, was impotent and could not pass his urine at will. Circulatory: Dulness over manubrium; embryocardia; loud ringing second aortic; blood pressure, 140/90; pulsation in notch; liver enlarged, edge was hard and sharp, no tenderness. The roentgen ray revealed a typical aneurysm. Nervous: Right pupil was irregular, both fixed; knee and ankle jerks diminished; Abadie's sign, +; definite ulnaris hypesthesia. Serologic: Blood Wassermann, + + +; spinal fluid not examined.

CASE 18.—Man, aged 45, was infected with syphilis twelve years previously. He had a lesion on his neck which refused to heal; bleeding from nose; ulcerating lesions in the throat. He was treated for diphtheria, but with no benefit. He had diffuse abdominal pain with passage of tarry stools. There was a stellate scar on the right tonsil. Circulatory: Blood pressure, 110/70; vessels sclerosed; spleen palpable; probable thrombosis of intestinal vessels. The roentgen ray revealed a hypoplastic heart. Nervous: Pupils were miotic and irregular, sluggish reaction to light; knee and ankle jerks absent; loss of sense of fulness of bladder; hypotonus; gastric crises (?). Serologic: Both Wassermann tests were negative; spinal fluid shows simply increased globulin; luetin test positive.

CASE 19.—Man, aged 49, had a chancre twenty-five years ago. A number of times he could not pass urine at will. Circulatory: Systolic murmur in aortic area; very loud second aortic; blood pressure, 150/90; liver palpable, nodular (hepar lobatum). A roentgenogram revealed a definitely dilated arch. Nervous: Pupils were unequal, fixed; ankle-jerk much diminished; left abdominal reflexes, absent; Rossolimo, positive on left; anal crises; disks grayish. Serologic: Blood Wassermann, + + + +.

To my mind the pupillary changes in aneurysm are rarely due to pressure on the cervical sympathetic. They are rather the result of the associated syphilis of the nervous system.

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* Several of the cases cited showed the picture of parenchymatitis luetica, a term coined by Brauer to denote simultaneous involvement of all parenchymatous organs; heart, liver, kidney, and nervous system. (Cases 10, 11, 17 and 19.)

FURTHER OBSERVATIONS

Through the courtesy of Dr. Douglas Symmers, I have had access to the postmortem records of the State Hospital for the Insane at Morristown, N. J., for the period of 1907-1915. There were eighty-three patients who had general paresis. Of these, I have selected only those about 45 years old or less who had changes in the aorta indicative of syphilis. There were forty-nine such cases, and among the remaining older cases the lesion in the aorta was aortitis luetica in thirteen, making a total of sixty-two cases with syphilitic aortic disease, that is, 75 per cent.

SUMMARY

Summarizing my own observations, I may say that among 125 cases of syphilis of the central nervous system, there were 19 cases of cardiovascular disease — an incidence of 14 per cent. Of these, 13 showed disease of the aortic valve either alone or in combination with aneurysm or dilatation of the aortic arch. There were two cases of myocardial degeneration with resulting decompensation. Two showed typical aneurysms without demonstrable disease of the aortic valve. In the series was one carotid aneurysm and one patient showed the clinical picture of premature atherosclerosis with probable occlusion of mesenteric vessels.

INTRASPINAL TREATMENT

A word on intraspinal treatment. That the cerebrospinal fluid is poor in antibodies is shown by the necessity of taking larger quantities of it than we do of blood serum for the Wassermann test. We also know the value of serum in cerebrospinal meningitis when the antibodies are introduced from without. Attempts to treat general paresis with nucleic acid and tuberculin injections really resolve themselves in efforts to stimulate the antibody mechanism which we now know is intimately associated with fever. So too, it seems to the writer, it is not so much a question of introducing arsphenamin into the cerebrospinal fluid; it is rather one of introducing antibodies. The value of a preliminary intravenous injection of arsphenamin would consist in the destruction of spirochetes with consequent calling into play of the antibody mechanism of the blood. The injection of the patient's own serum would then furnish the antibodies which seem to get into the cerebrospinal fluid with difficulty. It would be for the immunologist to devise a means of concentrating the antibodies in the blood and then making use of them for therapeutic purposes.

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SYSTEMATIC STUDY OF THE PERSONALITY IN ESTIMATING ADAPTABILITY

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If we were to summarize in the briefest way the advance of recent years in psychiatric teaching, we should be obliged to group what is to be said around a very conscious use of the conception of adaptation or adjustment of the individual to the needs presented within himself and by his environment. Problems involving the instinctive urgency for adjustment, the reaction of the individual in his failure to adjust himself, the alternatives automatically resorted to when for any reason there is resistance to adjustment, the interplay of partial adjustments and of alternatives—fortunate and unfortunate—have formed topics of intensive studies which have furnished the tools of modern psychiatric practice. Gradually these studies have brought into the foreground certain features and have, by detailed exposition, so adequately demonstrated their importance and significance that we are now justified in taking for granted that, wherever these particular features are found, there has been an approaching sequence of details the general nature of which may be assumed and depended on as known factors in figuring out the problems our cases bring to us.

SCOPE OF THE PRESENT ARTICLE

With this general assumption in mind I wish to present in a somewhat organized form observations relating to the personality which probably are individually not unfamiliar. The conception that the personality, as the accumulation of habitual reactions which the individual may under most circumstances be depended on to employ, gauges the adaptability of the individual, is, perhaps, a sort of truistic one. I wish simply to cite and organize the interpretation of those traces in the personality which, under circumstances of mental or nervous disorder, enable us to see more clearly and at the earliest possible moment the adaptive needs and deficiencies of our cases and so to handle them with greater precision.

It is, I assume, unnecessary in discussing the matter of adaptation, as it applies within the region of psychiatric interest, to express the imperative need of not neglecting the weight of toxic or other organic reducing causes which may enter into the etiology of mental disorders. Factors of that type are of the utmost importance. It may, however, only be fair to express the conviction that, for the most part, such

reducing factors tend mainly to reduce and, as a result, those forces which work after an habitual fashion are apparently left free, or in a less hampered way, to follow the course determined by their natural momentum, after the manner of the adage that "there is truth in wine." Whether the personality, as such an habitual force, serves to guide the individual into a psychosis is another question and may be left to a later time to discuss. I am now undertaking to present merely such indications of limitation of adaptability as a study of the personality may reveal.

In a somewhat academic way it can be stated that, with regard to adaptation, we may adapt ourselves with reasonable fulness, we may partially adapt ourselves, we may fail to adapt ourselves and remain inert, or we may more or less completely fail to adapt and, instead of being inert, we may engage in a variety of types of activity the most of which may have the function of substituting for good adaptation, or of serving in some other way as a blind or an excuse which enables us to evade the issue without the raw recognition of it we might otherwise have. It is with reference to some such scheme as this that I wish to arrange and present some illustrative cases, and to point out peculiarities of personality apt to be correlated with miscarriages of adaptation of one sort or another.

The first two cases are examples of personality of relatively well-balanced type.

ILLUSTRATIVE CASES

CASE 1.—*Present History.*—The first case is that of a minister, aged 26. When he entered the hospital he had an acute psychotic episode characterized by mental clouding, blind restlessness and hallucinations of sight and hearing. He could be aroused rather readily so as to respond fairly clearly for a few moments, only again to drop back into his previous state. His general attitude, nevertheless, was frank and free from restraint. He was much reduced physically. At the time he was regarded as an instance of delirium with exhaustion as a leading factor. This was confirmed by a speedy and complete recovery.

Past History.—His adolescence presented nothing especially striking. He was reared in a rather stiff, rigid family atmosphere. He progressed normally, or somewhat better than the average, in school. He entered college at 18, but after ten weeks left because he was homesick—an episode which unfortunately was not made clear. He then went to the Middle West and entered a high school. He soon became engaged. The next year he entered college. He did well there and supported himself by preaching. After college he taught Latin a year and then entered the theological seminary. He still supported himself by preaching and at the end of his first year in the seminary and six months before his admission to the hospital, he married. He started a strenuous course in the Fall. In November he began to sleep poorly. He received some medicine that helped him so much that he was a little suspicious of it. He did not relax in his work, became more sleepless, and finally after an especially difficult and successful undertaking he broke down in a delirium.

Personality. — There were in the delirium plain enough disclosures of repressed instinctive tendencies both before and after his marriage. His conflicts in regard to his wife, which he repressed and which had caused him considerable struggle, stood out plainly in his productions. Yet, if we were to standardize him from his productions and general symptomatic behavior, he would undoubtedly compare favorably with the normal. In his delirium he presented a frankness and transparency incompatible with habitually poor adaptability. His history, furthermore, demonstrates a good adaptability. His interest in religion was apparently not one in reaction to any especially sharp internal conflicts. It was a rather natural outcome of his home environment.

His personality is likewise transparent. Intellectually he is above the average, both in acquisition and in application. In his application he shows a tendency to overactivity—that is, he is talkative, is very industrious and is inclined to work under tension. A motive for this is at once seen in a moderate feeling of insecurity. He is somewhat unduly concerned as to the estimation others make of him. However, he spontaneously recognized this and seriously sought to discipline himself in regard to it. This feeling did not work out as a craving for sympathy or as an undue concern about his physical health. Socially he showed no restrictions. He enjoyed people and was at ease with them. He is not stubborn. He takes advice well. He is frank and open, not a day-dreamer and he showed no inclination to phantastic schemes or plans.

His feeling of insecurity appears again in an inclination to be slightly oversensitive, yet he was quite free from any distorted habits, such as jealousy and suspiciousness, based on it. It is also shown in a tendency to worry, though on the whole he is light-hearted and cheerful. He is free from unfortunate display of temper. He gives no evidence of habit distortion referable to sexual or instinctive interests. He is not prudish, not effeminate. He is quite open and natural with women. Finally, he is naturally interested in healthful physical diversions.

Comment. — In this personality we therefore see little evidence of poor adaptation in traits indicating habitual evasion or emotional absorption. He displays a feeling of self-insecurity and, though he adapted himself well toward it, it led to somewhat unfortunate results by causing him to work perhaps too industriously and under tension, to have too much regard for the opinion others held of him, and to worry somewhat unduly. His adaptability is further somewhat favorably documented by a ready appreciation, after his recovery, of his needs and a sensible attitude of correction toward them.

Case 2.—*History.*—Another similar case is that of a woman who developed a deep delirium immediately after a confinement. She became a little restless and received morphin and later hyoscin, both in considerable amounts. She then, like the preceding patient, became hallucinated, restlessly and aimlessly active, quite disoriented, misinterpreted her surroundings and displayed a marked paraphasia. She showed also the same momentary mental clearness on being roused. She displayed, too, a similar directness and transparency of behavior, though she showed a rather strong tendency to occupy herself with fancies centering about other possible marriages she might have made. She recovered after about three months.

The patient, aged 35, passed through the period of adolescence without any especial irregularity or odd behavior. At about 8 years of age there were unfortunate sexual experiences which emphasized interests to which she adapted herself well, yet which nevertheless remained more or less in the

foreground. She had an uneventful, broad, rather full and efficient life up to her marriage at 27.

She had a stepson to whom she devoted herself happily, but owing to financial restrictions she denied herself children though she was eager for them. Nevertheless, she remained naturally happy. Later indications revealed that she allowed her fancies some play in the direction of what wider opportunities would have brought if she had married some one else, but this did not appear to modify her behavior or mood. On the whole, her adaptation appeared quite satisfactory.

Personality.—Her personal make-up, too, was quite clear and transparent. Intellectually, she was above the average. She is alert and a good manager. Perhaps she was a bit overtalkative, but was not overactive otherwise, and on the other hand she was by no means lacking in energy. She was not only free from stubbornness, but she profited by her mistakes and adjusted herself well to the plans of others without at the same time being too malleable. She was well liked socially, though it is said that she was inclined to devote herself to a few intimate friends rather than to seek a wide acquaintance. Nevertheless, she was quite at ease with strangers, quite tactful, and free from petty sensitiveness and jealousy. She was quite frank and open. Her mood was evenly cheerful. She did not worry. She took hardships well. She was not irritable. She was, however, rather easily startled by thunder and loud noises, but otherwise was not inclined to have fears. She was not bashful. She was quite naturally and frankly affectionate and passionate, but plainly guided this well, except possibly for a tendency in later years to indulge a little in fancies as stated above. She was naturally interested in healthy diversions.

In this case, too, we see a well-adapted individual. She displays a distinct, but on the whole healthy, passionate nature. Except for a tendency to let her fancy play and for a possibly too easy acquirement of contentment, we can scarcely criticize her capacity for adjustment.

For psychiatric interests it is fair to conclude that these two cases represent instances of average good adjustment. The terms used in a systematic description of them are those which tend to indicate, on the one hand, a not undue absorption or distraction interfering with a free disposal of energy on occasion of need, and those, on the other hand, which tend to show that the individual, automatically or consciously, tends to protect himself, to compensate habitually for deficiency in one field by activity in another, or by the employment of evasive traits.

In sharp contrast with this open, frank type of individual whom we instinctively trust, I wish to describe two patients who have, perhaps, a minimum range of adaptability compatible with average living conditions.

CASE 3.—*History.*—The patient, a man, aged 32, is employed as a clerk in a large metal business. He was a free, active, careless boy. At 9 he began to sing in a church choir. From about this age until he was about 17 he was out late at night, visited pool rooms and kept rough company. All this he did in disobedience to his parents. At 17, suddenly and immediately after

his father's death, he reformed. He became quiet, expressed regret for his former behavior, lived a strict life, and neglected physical exercise for his music. From about a year after this and continuing four or five years he complained of his stomach. He went from one physician to another, and thought he was going to die. At 20, he showed a good deal of animosity toward a fellow clerk who advanced more rapidly than himself. At 22, he became infatuated with his cousin and became so angry at his brother for calling on her that he left home for two or three days. Later he showed a more or less intense interest in particular women, but he dropped them suddenly one after another much to the mystification of the women and his family. At 25, he thought an old friend was conniving with another employee to injure the patient's standing with his firm. From now on he kept more and more on his guard and was more or less continuously in inward turmoil, which culminated in his admission to the hospital in an acute paranoiac episode. This development was in close relation to a feeling of guilt and apprehension concerning a habit, he had practiced for years, of getting into crowded street cars and allowing himself to be pressed against women passengers. He developed into a typical paranoid dementia praecox.

Personality.—His personality is characteristic. He is intellectually bright. He was closemouthed, but was a hard worker. He was inordinately proud and particular in personal appearance beyond what would naturally be expected. He was hypochondriacal. His leading characteristic was his unwillingness to take advice. He held his opinions stubbornly and would not acknowledge his faults. He had few friends, was not easily approachable. His behavior toward others was characterized by a whimsical changeableness. He was suspicious, jealous and envious. He was serious, readily became apprehensive. In matters relating to sex he was formally correct to the point of being strictly on his guard, but apparently he did not develop, as many do, a prudishness; on the contrary, he displayed a prurient hypocrisy. He had no virile diversional interests. He devoted himself narrowly to his music.

Comment.—This case is a very simple example of the so-called "shut-in" personality. The traits cited nearly all have the function of preventing any one from peeking over his private personal enclosure. He cannot receive advice, for he has so frail a sense of self-security that the admission implied in receiving correction or advice would tend to shatter his self-confidence and lead him too painfully close to an appreciation of his limitation.

CASE 4.—*History.*—Another case is that of a woman, aged 38. She was admitted after she had been distinctly abnormal for about three years. At the time of her admission she displayed much scattered aggressiveness. There was also a marked reduction of judgment in even simple, practical matters. She occupied herself with other people much to their detriment, but this she failed to appreciate. She developed poorly systematized delusions of persecution. She became quite inaccessible, and at opposition or even at attempts to guide her, she became violent to a degree which rendered her antisocial. She was regarded as a case of paranoid dementia praecox of very gradual development.

She developed normally and after an academic schooling and some training in physical culture she taught Delsarte in the Middle West. At about 21 she became engaged but broke this engagement when she met her present husband, who was then a minister. At this time she had a tic which consisted in a loud hemming in the throat and which persisted for several years afterward.

She was married at 24. Her husband soon drifted away from the regular church and finally became a Christian Socialist. The patient opposed this vigorously. She gave as the chief reason that they would be social outcasts and would also be in precarious circumstances financially, neither of which was the case. Quite soon her husband established a good reputation and she at once began to exploit it for gratification of her social desires.

Personality.—As a girl she is said to have learned readily, but her attention was never very steady and early in her married life she said her mind wandered. She was never an accurate observer. She did not acquire a facility for adapting herself to work, which did not at the time afford her abundant satisfaction. She ruled her parents and other members of the family and did not know how to deny herself. She would not take advice and would not recognize her mistakes, and was firmly stubborn. She made friends readily but with one or two exceptions, did not retain them more than a short time. She has never been frank and when her weak points are touched, especially her lack of domesticity and maternal feeling, she either becomes angry or—to use her husband's expression—"shuts up like a clam," that is, she ignored them. She had moody spells which she is unable to account for and a temper which is violently excited by the slightest opposition. She differs, however, from most people of her type by quickly recovering from her temper and in being forgiving.

Comment.—Here, therefore, long before the onset of the psychosis, we find a vigorously developed faculty for evasion of adaptation and the most highly developed mechanisms for securing the evasion are those which constitute the chief features of the psychosis.

Earlier Personal History.—When she was about 30 years of age and eight years before she was admitted to this hospital, she began to pay much attention to abstruse philosophical problems, and in this she did not prevent herself from very cheap imposition. At about this time, her natural absent-mindedness began to be gradually more exaggerated. This was also the time of a lull in her husband's affairs. He had become more radical and to some extent was deserted by former supporters. The patient at this period had a vision in which she saw an elderly and wealthy gentleman whom she fancied would support them in their work. From this time on she has had occasional hallucinations. When the news of this wealthy gentleman's death was brought to her she claims to have heard his voice say, "Trust me my child." Some three years before admission her husband practically abandoned the church. He bought a farm and devoted himself to literary work. The patient was now much distressed at the situation. She was more or less isolated in the country, occupied with family cares for which she had no interest. Moreover, her husband was away from home much of the time. She began to worry lest some calamity befall her husband. She spent money foolishly and made elaborate presents without justification. She insisted on having her way and was unmanageable. While under observation she displayed an impenetrable resistance to all efforts to lead her to adapt herself. If met casually, she usually behaved with gracious but shallow heartiness. If, however, one attempted to guide her she became resentful, told how her children need her and what they are missing in her absence, and soon fell into a passion.

These same dangerous traits must, however, be interpreted entirely within the setting in which they occur, as in the following case, which recovered.

CASE 5.—*History.*—The patient was 31 years of age when admitted to the hospital. She was a healthy child and was reared in a crowded district in New York City and apparently under few elevating influences. She stopped school at 14 and was left an orphan between 15 and 16. From this time until her marriage at 22 she worked in a laundry. She remained well except for headaches which resembled a migraine and which ceased after her marriage. She went out nights a good deal and was inclined to be a little sporty. She had, however, only one intimate girl friend. She associated more easily with men that with women.

After her marriage she dropped her friends and made no new ones. Soon after her marriage, also, she displayed a rather gross jealousy of her husband. During the next eight years she bore several children and had numerous miscarriages. There were financial hardships also, but on the whole, except for a growing jealousy of her husband and a general willingness to be somewhat careless in her housework, she appeared to get on well enough.

About five months before admission she had her chest examined. She has had a return of the headaches she had before she was married. She then began to worry about herself, became a little absent-minded and finally definitely absorbed. She smiled a little to herself. About a month before admission she referred to her physician as if he were in some way hostile toward her. She spoke of hypnotism in this connection. A little later she said she was ashamed to look the doctor in the face. A few days later she said a girl who sat in front of her at the theater said something about her husband. Shortly after this she began to say that God spoke to her. Two days before admission she was unusually dreamy. She said she had a vision in which God addressed her as his St. Anne. A few hours afterward she became excited and said her physician was cutting up her husband.

Personality.—On admission to the hospital she was mentally clear, but continued to hallucinate and to persist in her delusions. For a short period she became rather excited and, at the time referred to, her delusions which had a decidedly erotic tinge, plainly served to obscure her own longings about which she had a sense of guilt. She at first displayed a considerable absorption in her ruminations, and on one occasion there was for a few hours a catatonic-like state with waxy flexibility. More and more a depressive affect now came into the foreground. The hallucinations and delusions retreated and she recovered in ten weeks, but without satisfactory insight.

Intellectually she was up to the standard of her family and class. She was a good manager. Nevertheless, she was naturally not talkative and was somewhat indolent. She was very conceited, proud, and overindependent. In her associations with others she showed considerable restraint. She had few friends and was a little backward socially. She found it very difficult to take advice, was headstrong, wanted her own way and could not face her mistakes. She was jealous, sensitive and naturally suspicious so that she had ideas of reference, thought others talked about her. She was not frank. She was quite imaginative, but it was not determined to what extent she day-dreamed. It was known that she neglected her work to read novels. Her mood was naturally variable. She worried, felt abused, displayed tantrums of temper. She was vigorously passionate, liked to be petted, but was restrained and found it difficult to express her feelings to others.

Comment.—This personality closely resembles that of the two foregoing cases. They are all on the defensive and exhibit the correlative traits of that attitude. The last case, however, is in a degree less pronounced than the other

two. Her adaptability allowed her to meet her difficulties perhaps not half way, but nevertheless far enough to keep within a corrective distance of reality most of the time. That she displayed the symptoms she did can only be taken as further documentary evidence of a perilous exercise in the evasion of facts, and it places her adaptability close to the danger zone.

The foregoing cases represent instances in which the imperative to adaptation was urgent. There was in the first two of the just preceding three cases no middle ground at which it was comfortable to arrive. They had to adapt or were obliged to adopt a more or less completely overwhelming subterfuge. That adaptation may be avoided without such subterfuge is amply illustrated by the cases of dementia praecox which slip away without marked trends. The two following cases represent variants of this general type.

Case 6.—*History.*—The first of these is a man, aged 40. He was reared in relative luxury in a family in which there were traditions of aristocratic comfort and ease. He had a personal servant from an early age, but developed no tendency to snobbishness. He was a happy, care-free boy. He went to boarding school early, and from 15 till 17 played a good deal, in an innocent way, and studied little. Then family reverses began and he went, at 18, to prepare for professional work. He worked rather hard and was a general favorite.

He finished his professional training at about 24. His father now died and the patient was obliged to shoulder responsibilities for a large family. He worked dutifully but was not happy. He longed for wider contact and he wished to specialize in his profession. He managed to do this. He lived up to and a little beyond his income. In this way and by being more obliging to others than he could afford, he was in continuous discomfort. After a disaster in his family he was much distressed, had difficulty in sleeping and on several occasions took a little chloroform. Then he took a small dose of morphin. Within a week or two he was taking morphin daily. Then he spent several months getting rid of it, but two years later after his child died, he began again and continued until he came to the hospital.

In the estimation of his friends he was a charming and successful man and though not one of great force, nevertheless a man who inspired confidence.

Personality.—The study of his personality served to shape more definitely the suggestions in the history. There is no question but that he was above the average intellectually. He was subject to enthusiasms, but they usually burned themselves out rather quickly. He was self-depreciatory but at times reacted by a show of stubbornness, especially if it were a question of gratifying a strong desire. Socially he was unusually adaptable—even too much so—as he did favors for others he could not afford to do and was timid lest he offended others. He cooperated well and was reasonably frank and open. He was very imaginative and sentimental. He was naturally cheerful but has mood changes downward and revulsions against application to his work. He was very affectionate. Toward matters of sex he is rather prudish. He has few virile interests. He was strongly attached to his church and holds a simple, childlike faith in it.

Comment.—This patient is therefore an individual with a marked intolerance of tedium and discomfort. He has a strong attachment to simple moral ideals developed in a chaste, sentimentally dominated home atmosphere. He

has never faced his problems carefully, but has drifted along instinctively. He is exceedingly docile and takes the line of least resistance, though when his trend in this direction is reinforced by a positive wish, he is capable of being quite stubborn. He is, in other words, an individual who describes the curve of his life docilely about a center of emotional fascination. In this particular case the fascination stood in an individual of otherwise relatively good adaptability.

In a companion case the same general mechanism works out more unfortunately.

CASE 7.—*History.*—This patient is a man of 45 and of whom very careful anamneses were taken from several different sources. These indicated that he was on the whole an exemplary, somewhat retiring boy. He received highest prizes for scholarship in school. He went to a well-known college. He was supplied by his father with all reasonable necessities, yet he on one occasion stole money and property from other boys. This was patched up. He finished college and took up a law course. While at this he appropriated for his own use a small amount of money entrusted to him for other purposes. He entered the practice of law and did chiefly an office practice. He became much respected and was known as a man who was able to settle differences out of court. He was intrusted with numerous fiduciary accounts. He was particularly kind and went out of his way to do a good turn for others. He was much depended on in his church. It was apparent that in his inclination to help others he was a little gullible. He was a little extravagant in his way of living.

Slightly suspicious indications were carefully followed up, and it was found that not long after his marriage at 28 he became mixed up with a woman and there were suggestions of affairs of the same nature later on from time to time. At 39, it is known that he drank some. At 44, it is known that on one occasion he was intoxicated. His income probably at no time exceeded $2,000. Just before admission it was discovered that he had appropriated for his own use—by forging—funds intrusted to him by clients. Soon it was found that these peculations had been extending over many years and were considerable in amount. In a somewhat careless way, from period to period, he robbed Peter to pay Paul and then took from Paul to replace what he had taken from Peter.

Personality.—He is an individual who, after this revelation, would pass as an arch-hypocrite. Yet if hypocrisy implies a conscious false pretense for a clearly worked out purpose he is no more an hypocrite than an hysterical patient is. He is really an individual at the mercy of his tendencies.

A systematic study of his personality showed that intellectually, on the side of acquisition, he was up to the average of his family, if not above it. He was, however, impractical, planned poorly or not at all, and was a poor observer. While his attention appeared good (and on formal test proved to be so), he was rambling in his talk and seemed to have a subnormal capacity for coordinating his data. He was always more or less hesitating in his opinions. This intellectual lethargy had its correlate in his physical activity which was quite scattered. While he had little impulse to physical activity, he nevertheless kept busy doing what in the case of an orderly man would have been unnecessary.

Consistent with this he was self-depreciatory, lacking in self-reliance and generally timid. He was very sociable and made acquaintances readily. For this he apparently relied on a very responsive, sentimental sympathy which,

while it was awake, quite completely dominated him and led him into promises which he fulfilled only at considerable sacrifice. As a boy it was learned that he was obedient, but secretive. He was tactful, but it was the tactfulness of one who yields without planfulness and, currying favor in this way, accepts whatever this sort of near-wheedling happened to bring him.

He was not frank. In a way this conception is not applicable to him. He is a good example of an individual who by a certain careless procrastination is always in arrears and is so busy juggling expedients that he seems to himself too occupied to be able to take time to see himself and his affairs in any correct perspective. He was too close to them. He worked in a hard, uneconomical way and attained no satisfaction from it. He never got ready to be frank.

His mood was quite closely parallel with the ups and downs of his affairs. He often appeared worried, again on slight provocation he saw things in very rosy colors. At home he was often pettish and displayed a spoilt-child behavior. He had a poor sense of humor.

He was very sentimental. As a boy he was always in love. He is a day-dreamer. His fancies went far afield and had a strong sexual coloring. He took alcohol to encourage them.

Comment.—The personality status and a somewhat careful analysis made later, indicate a strong fascination capable of competing favorably against a natural inclination to reality. He surrendered in a considerable measure. His real life became a sort of fiction. His wish fancies covered over reality in such a way as to deprive him of a clear vision of the seriousness of his misdeeds. He would not in clear consciousness have injured any living thing but by a little indirection he was led to rob widows and orphans. This fascination also makes clear why he was not a good observer, why he was not practical, why he was not energetic, and why he had a sense of insecurity with traits developing from that. He is a constitutionally inferior individual and was obliged to go to prison.

OBSERVATIONS

The forger, while evidently subject to the same disabling difficulty as the preceding case, is plainly much more disabled. The most obvious, and perhaps the most important difference between the two cases is that the first one was occupied with fascinations which, though auto-erotic in character, still remained, after a fashion, objective — if that is not a contradiction in terms. His interests are, to a large degree, centered about chaste, domestic, sentimental ideals which lend themselves in some measure to specific objective embodiment. The forger, on the other hand, was occupied with fascinations more of an imaginative, subjective type. He confessed that he was much occupied with erotic fancies. He was so subject to the tendency as to fictionalize reality in a mild way. For his own welfare it must be said that his compromises, or, perhaps better, his compensating activities — such as devotion to personal service, sentimental loyalty, and objects of an altruistic nature — tended to offset by somewhat practical contact, his tendency to unreality.

To illustrate a still more pernicious extension of this tendency I wish briefly to present another case.

CASE 8.—*History.*—This patient was 29 years old when admitted to the hospital. It was stated that as a child he appeared normal enough, except that he did not remember his lessons and that at about 10 he developed a tendency to be quarrelsome. At 17 he failed college entrance examinations. His father bought a manufacturing business for him to grow into and finally own. But he took little interest in it, left it and wandered off into this and that enterprise, always unsuccessful, always gullible. He drank and dissipated some. Finally he reformed and became religious. He gradually developed delusions, and said eventually that Astor was God and that he was Astor's son, Christ. Finally he showed very florid wish-fulfilment delusions tinctured with homosexuality. There was no acute episode. He drifted along serenely. Remained quite clear and was just grandiose and patronizing enough to tell about himself very fully.

Personality.—The personality analysis covering a time well antedating the distorted behavior representing the psychosis, describes him intellectually as poorly retentive, though he appeared to grasp things well enough. He was impractical and appeared to expect the world to lend itself to interpretation in his rather juvenile terms. He was lacking in energy, though he had enthusiasms, which, however, soon spent themselves. He was a little overbearing and "chesty." Socially he was somewhat snobbish. He was not stubborn, but on the contrary rather too pliable. He was free from malice. He day-dreamed to a marked degree. Was serious minded and inclined to have the blues. His fancies ran luxuriantly to sexual topics. There were contrary sexual tendencies.

He said, and there seemed to be no reason to doubt his very consistent statements, that at as early an age as 5 he had sexual thoughts and soon afterward thought of girls in an erotic way. At 7 or 8, probably after seeing his father exposed, he felt as if he must look at the genital region of men. It troubled him. He felt he was dirty. He frequently said his peculiar tendencies made him feel different from other boys. Apparently he developed a marked feeling of self-depreciation in relation to it. He showed also, undoubtedly as a reaction to it, a behavior of superiority toward his family. He belittled the culture of his family, admired the refinement of aristocracy and became haughty and disdainful and very precise. He said he always felt restricted and penned in and never felt happy. He always felt as if he were under a cloud.

Comment.—This case represents an extreme instance of habitual surrender to the auto-erotic. He had essentially no objective application of his interest. He worked over his world into romantic juvenile terms. From the standpoint of adaptability this general type of case is to be estimated by the degree it is intellectually practical, physically energetic, and the extent to which he has interest to dispose on objective reality. This type of case emphasizes the general observation that lack of mental and physical energy, other things remaining equal, is usually to be accounted for by an emotional satisfaction or indulgence which short-circuits it.

GENERAL CONSIDERATIONS AND CONCLUSIONS

The cases cited have, I believe, illustrated practically all the traits of personality important in routine practice, and the cases also suggest the adaptive correlates of the traits. The cases, in addition, illustrate

two general types of personality. One may be described as presenting a strong impulse to adaptation, and, failing of adaptation, is prone to develop traits of personality representing extreme measures of evasion. The other type is that in which the impulse to adaptation appears to be more or less neutralized. The characteristic traits of this type are those of hebetude and romantic dreaminess.

The types of personality intermediate between these extremes, those in which adaptation is distinctly partial, I have not represented. They would include those who break down in the manic-depressive way, the psychoneurotic fashion, and those of that miscellaneous remainder we are content to refer to as the psychopathic inferiors.

It will have been noted, and perhaps with some question, that a systematic study of the personality is, in a way, only an emphasis laid on a special feature of the anamnesis. A good history would probably include practically all that would be inquired about in a systematic study of the personality. That which makes an anamnesis satisfactory is the degree to which it gives a satisfactory status of the personality. There are a number of reasons, however, for still keeping a sort of special department of the history for the personality status. These reasons have to do with the informant, the patient, and the person who takes the history. A history properly taken in such a way that it adequately and progressively cross-sections the patient's life from point to point, is an undertaking which relatively few have the patience and aptitude for, and on the whole one secures better uniformity if the inquiry as to the make-up is concentrated into a special corner of the anamnesis.

TREATMENT OF DEMENTIA PRAECOX BY INTRAVENOUS INJECTIONS OF SODIUM CHLORID

TOGETHER WITH STUDIES OF THE CHLORIN CONTENT OF THE BLOOD

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Kraepelin[1] noted that sodium chlorid infusions caused an increased appetite and thirst, and improvement of the general health of cases of confusion and restlessness. Ishida[2] administered a 0.9 per cent. common salt solution intravenously, as far as circumstances permitted, in ten cases of dementia praecox. In five untreated cases of catatonia the quantity of chlorin in the blood was tabulated. The amount varied from 0.199 to 0.220 per cent. (Estimations made by Professor Horinchi by the Volhard-Salkowski method.) Ishida calls attention to this low chlorin content of the blood and says, "I am led to infer that common salt in the blood in catatonic patients as well as those with other clinical forms of dementia praecox might be deficient, and that the infusion of physiologic salt solution would meet this deficiency, though the results might be but transitory." As the result of treatment of the ten cases he concludes that "in nearly 50 per cent. of all cases I have observed the awakening of interest in work directly following treatment. Remissions have been observed in four cases; the longest duration being four months." Fever occurred in some instances after the infusion was given. Ishida suggests that this might be due to impurities of the solution as a result of defective sterilizing methods.

Guthrie,[3] in a paper read at the fiftieth annual meeting of the West Virginia Medical Association, stated that he followed Ishida's suggestions and gave normal salt solution intravenously. He reported the results of treatment of fifteen cases based on chemical analysis of the blood. These analyses showed a deficiency of sodium chlorid. Of the fifteen cases, ten, "very unclean before treatment, were improved in this respect. In eight cases, there was an awakening in interest in work directly following the treatment, and in seven of these cases this was continued. . . . Seven cases were greatly improved . . . One apparent cure . . . since treatment was commenced five and

1. Kraepelin: Psychiatrie **1**:623, Ed. 8.
2. Ishida: Am. J. Insan. **73**:541, 1917.
3. Guthrie: Dementia Praecox, Observation and Treatment, Fairmont, W. Va.

one-half months ago. This patient has put on 25 pounds in weight and improved mentally to a surprising degree. All fifteen patients showed increase in appetite for food and all gained flesh. All fifteen patients showed more or less improvement in their disposition. No elevation of temperature or bad symptoms of any kind developed after the injections."

Guthrie does not give the figures obtained nor the methods used in the making of the blood analyses. Later[4] he recorded condensed notes of five of the fifteen cases treated and stated the amount of salt solution used. No blood analyses were given.

AUTHOR'S OBSERVATIONS

Ten cases of dementia praecox were selected for treatment at the State Hospital, Warren, Pa. Blood analyses were made on all cases as well as on a number that were not treated. The salt solution used was made 0.9 per cent. strength in freshly distilled water. The sodium chlorid used was free from sulphates, alkaline earths and heavy metals, magnesium, iodids, potassium, iron and ammonium. The tests for the determination of these substances were those recommended by Krauch in "Chemical Reagents, Their Purity and Tests," 1907. The following methods were used in making the blood analyses:

Urea, Van Slyke and Cullen;[5] nonprotein nitrogen, Folin and Denis;[6] creatinin and creatin, Myers and Fine;[7] glucose, Lewis and Benedict;[8] calcium, Lyman;[9] chlorids, Harding and Mason's[10] modification of the McLean-Van Slyke method;[11] cholesterol, Weston.[12] Blood for analysis was collected in the morning before the patients had had breakfast and was analyzed at once.

The accompanying table shows the amounts of the various constituents found in the blood of the treated cases before treatment was begun.

There was practically no variation in the figures obtained from analyses made before treatment and those made three days after treatment. It will be seen from the table that the values found are within the normal range. Analyses of blood from untreated cases of dementia praecox, manic-depressive insanity and epileptic psychoses gave practically the same figures as those shown in the accompanying

4. Guthrie: Dementia Praecox Studies **1**:61, 1918.
5. Van Slyke and Cullen: J. Biol. Chem. **19**:211, 1914.
6. Folin and Denis: J. Biol. Chem. **26**:491, 1916.
7. Myers and Fine: Chemical Composition in Health and Disease p. 19, 1915
8. Lewis and Benedict: J. Biol. Chem. **20**:61, 1915.
9. Lyman: J. Biol. Chem. **29**:169, 1917.
10. Harding and Mason: J. Biol. Chem. **31**:55, 1917.
11. McLean and Van Slyke: J. Biol. Chem. **21**:361, 1915.
12. Weston: J. Biol. Chem. **28**:383, 1917.

table. In the cases here reported there was no deficiency of chlorin in the blood and there was no deficiency in any of fifteen other cases examined. The blood examinations were made by the hospital pathologist, Dr. Paul G. Weston.

Intravenous injections were made by the gravity method. The initial dose was 3 c.c. per kilogram of body weight. Each succeeding dose was increased by 30 c.c. and injections were made at seven-day intervals for a period of four and one-half months.

The diagnosis of dementia praecox was made at the staff meeting. Long abstracts of the case histories are, therefore, not given.

THE AMOUNTS OF THE VARIOUS CONSTITUENTS FOUND IN THE BLOOD OF THE TREATED CASES BEFORE TREATMENT WAS BEGUN

Case	Number	Mg. per 100 C.c. Blood					Per Cent.		
		Non-protein Nitrogen	Urea Nitrogen	Creatinin	Creatin	Calcium	Glucose	Chlorin as Sodium Chlorid	Cholesterol
1	8346	23.5	18.50	1.71	4.20	6.00	0.101	0.484	0.150
2	7576	20.6	15.50	1.53	4.10	5.62	0.091	0.500	0.175
3	8917	24.7	15.65	2.12	5.20	5.50	0.110	0.525	0.150
4	6900	25.0	17.50	2.30	5.40	6.15	0.105	0.506	0.160
5	7331	25.2	17.45	1.80	4.60	7.25	0.095	0.491	0.175
6	7771	26.5	16.70	1.75	4.75	7.75	0.092	0.522	0.170
7	7303	27.6	15.40	2.10	5.00	7.75	0.105	0.537	0.155
8	5945	28.0	17.50	2.25	5.20	6.00	0.112	0.519	0.180
9	8278	28.1	17.90	1.90	5.00	8.00	0.095	0.494	0.180
10	8642	26.3	18.20	2.15	5.80	5.50	0.108	0.430	0.155

SUMMARY OF CASES AND RESULTS

CASE 1 (8346).—Age, 31. Diagnosis: Dementia praecox, hebephrenic; duration, seven years.

Condition at Time of Treatment: Indifferent, apathetic, tidy in habits.

Result: Mentally, brightened up slightly; physically, gained 7 pounds.

CASE 2 (7516).—Age, 28. Diagnosis: Dementia praecox, catatonic; duration, four years.

Condition at Time of Treatment: Resistive, mute, untidy.

Result: Mentally, none; physically, gained 15 pounds.

CASE 3 (8917).—Age, 33. Diagnosis: Dementia praecox, hebephrenic; duration, fifteen years.

Condition at Time of Treatment: Evasive, irritable, confused, tidy.

Result: Mentally, appeared brighter and wanted to work and did reasonably good work; physically, gained 12 pounds.

This patient escaped after the last treatment had been given.

CASE 4 (6900).—Age, 24. Diagnosis: Dementia praecox, catatonic; duration, ten years.

Condition at Time of Treatment: Denudative, destructive, extremely untidy.

Result: Mentally, none; physically, lost 1 pound.

CASE 5 (7331).—Age, 32. Diagnosis: Dementia praecox, hebephrenic; duration, eleven years.

Condition at Time of Treatment: Apathetic, indifferent, tidy in habits, careless of personal appearance, hallucinated.

Result: Mentally, practically none; physically, gained 2 pounds; slight general improvement.

Case 6 (7771).—Age, 38. Diagnosis: Dementia praecox, catatonic; duration, seven years.

Condition at Time of Treatment: Resistive, mute, untidy.

Result: Mentally, none; physically, gained 5 pounds.

Case 7 (7303).—Age, 28. Diagnosis: Dementia praecox, catatonic; duration, eight years.

Condition at Time of Treatment: Mute, apathetic, indifferent, tidy.

Result: Mentally, practically none. There was slightly less apathy. Physically, general health improved, 14 pounds gained in weight.

Case 8 (5945).—Age, 31. Diagnosis: Dementia praecox, catatonic; duration, twelve years.

Condition at Time of Treatment: Denudative, destructive, filthy.

Result: Mentally, no improvement; physically, gained 2¼ pounds.

Case 9 (8278).—Age, 27. Diagnosis: Dementia praecox and imbecile; duration, eight years.

Condition at Time of Treatment: Indifferent, apathetic, untidy.

Result: Mentally, none; physically, none.

Case 10 (8642).—Age, 34. Diagnosis: Dementia praecox, hebephrenic; duration, from six to nine years.

Condition at Time of Treatment: Resistive, mute, untidy.

Result: Mentally, brightened up slightly; physically, gained 7 pounds.

SUMMARY

Mentally.—Seven of the ten patients showed no mental improvement; of the remaining three, two brightened up slightly, the third brightened up enough to work.

Physically.—Eight of the ten patients gained in weight from 2 to 15 pounds; one patient lost 1 pound and one patient remained stationary.

The blood of twenty-five patients was examined for chlorin content and in none was there a deficiency.

THE BEARING OF WAR NEUROSES ON IMMIGRATION

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Early in the present war an excessive incidence of functional nervous diseases was noted among the troops of all the belligerents, the handling of which constituted a major medico-military problem. The occurrence of similar neuroses among civilians subjected to the adverse influences in the war is probable.

It is expected that after the war many aliens who have suffered from war neuroses incident to military service or residence in devastated areas will apply for admission to this country. It will be the duty of medical examiners to detect these persons if abnormal and to determine what disposition from the standpoint of medical certification shall be made of them.

This paper is intended to deal chiefly with the latter aspect of the subject, but in order to arrive at a clear understanding of the war neuroses in relation to immigration it will be necessary, first, to inquire into their nature and incidence and to review the etiology and clinical manifestations of the disorders embraced by this term.

NATURE AND PREVALENCE OF WAR NEUROSES

Salmon reports that in the British Army mental and functional nervous disorders have been responsible for one-seventh of all discharges for disabilities, or one-third of all discharges if wounds are excluded. He estimates that the admission rate for insanity among the British Expeditionary Forces is about four per thousand as compared with a rate of two per thousand among the nonexpeditionary forces, and one per thousand among the adult civilian population of Great Britain. The insanity rate has not been as high, however, as in recent wars, and Salmon believes that the war neuroses are taking the place of the psychoses in modern war, this being in part due to the failure in previous conflicts "to recognize the real nature of the severe neuroses which are grouped under the term 'shell shock' in this war." Again he says, "it is certain that in the early months of the present war many soldiers suffering with war neuroses were regarded as insane."

While no reliable reports from any of the belligerent nations have been received indicating an unusual prevalence of nervous diseases among the civil population, it is probable, as stated in the foregoing,

that emotional causes relating to the war have precipitated mental and nervous disorders in some members of this class who by reason of inherent nervous instability were strongly predisposed. Civilians of healthy nervous constitution or those showing neurotic tendencies only of such mild degree that they are able to weather the unusual stresses of peace times have not, on the other hand, seemed to be adversely affected by the war. This may be accounted for by the fact that in civil life a man even in the war zones never has to endure such long continued danger, discomfort and fatigue as the soldier in the trenches. The former can alter his mode of living so as to get relief from the situation before it becomes unbearable, while the latter has no choice but to endure until relieved or until a breakdown intervenes.

Among the many features of the war which have tended to precipitate mental and functional nervous disorders none has been more potent than the continued bombardment with high explosive shells to which most of the sufferers from these conditions have been subjected. Many soldiers have developed neuroses immediately following the explosion of a shell in close proximity to them as a result of which they were knocked down, partially buried, had their comrades killed or suffered some other injury either mental or physical.

The frequent occurrence of this sequence of events led early to the coinage of the term "shell shock," which later came to be used as a diagnostic term to cover the whole group of functional nervous disorders and was even loosely applied to obvious cases of insanity. This term is unsatisfactory and misleading because many clinical types are covered by it. Moreover, it implies a single etiology acting instantly, whereas in reality, the train of symptoms which precedes the final breakdown that an explosion precipitates is often long and distressing and the causes producing them are varied. Many soldiers have developed their neuroses away from the firing line. In others doing duty in the trenches the condition has appeared under circumstances which allow the direct immediate effect of explosions as a causative factor to be completely excluded. For these reasons most writers on the subject prefer the term "war neuroses" to "shell shock," and they would limit the term to those functional nervous disorders whose etiology or symptomatology bears some direct relation to the war.

In addition to the neuroses which have been caused or colored by the conditions of war, many cases of a purely civilian type have developed among soldiers. These latter have all occurred in unstable individuals, most of whom would have developed a neurosis following some difficulty in civil life. Probably all cases which occur in the home forces and most of those who go to pieces after a few days at the front belong to this class of inferiors.

ETIOLOGY OF WAR NEUROSES

Hereditary defects and physical and mental causes are responsible for the development of the war neuroses. All observers admit the liability of each of these causes, but depending on their viewpoint, they attach different degrees of importance to them. Those who lay great stress on the physical factors, place a large proportion of cases in the category of those due to "injury of the nervous system without physical injury." Explosions have caused death in numerous instances without leaving any signs of external injury. Necropsies done on such cases have shown multiple punctate hemorrhages in the substance of the brain and spinal cord. It has been estimated that the force generated by a 17-inch shell is equal to 10 tons to the square yard, and Major Mott[1] thinks that in some cases, sudden death may be due to the transmission of this aerial compression to the ordinarily incompressible spinal fluid causing shock to the vital centers of the floor of the fourth ventricle resulting in arrest of the functions of the cardiac and respiratory centers.

Decompression with liberation of gases suspended in the blood causing emboli of nitrogen and carbon dioxid it is thought may also be responsible for some of the instant deaths. In addition to direct aerial compression concussions may be caused indirectly by the soldier being thrown through the force of the explosion against the side of a trench, or by having sand bags fall on his head or spine, or by having the roof or wall of a dugout blown in on him. The same author[2] points out the similarity of symptoms in severe cases of shell shock with burial to those observed in carbon monoxid poisoning, the effects of which are not always transitory and are sometimes permanent, and he thinks it possible that while lying unconscious at the bottom of a trench or dugout sufficient carbon monoxid generated by shells or mines is inhaled to cause those severe effects which some of these cases exhibit.

The victims of war neuroses are often found to have low blood pressure and other vasomotor disturbances. This lends weight to the theory that some disturbances of the functions of the ductless glands may be responsible for these conditions. Many symptoms of the gastric and heart neuroses suggest the same etiology. It is possible that endocrinitic disturbances may be important in the production of all neuroses. Little, however, is known about this and other physiologic factors that may later be found to be the true fundamental basis for these disorders.

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1. Mott, F. W.: Effects of High Explosives on the Central Nervous System (Lettsomian lecture No. 1), Lancet, London, **1**:331, 1916.
2. Mott, F. W.: Effects of High Explosives on the Central Nervous System (Lettsomian lecture No. 2), Lancet, London, **1**:545, 1916.

ESSENTIALLY PSYCHIC IN ORIGIN

Those who view the subject from the psychologic standpoint, while admitting the importance of physical causes in reducing the nervous resistance and in precipitating the acute symptoms, regard most of these cases as essentially psychic in origin. Undoubtedly many soldiers of sound constitution and normal make-up and in whom there is no trace of faulty heredity, have developed neuroses after long duty in the trenches. In some instances men have passed successfully through other wars, but have broken down under the strain of this one.

The explanation for the occurrence of these disorders in individuals otherwise healthy is to be explained, in part at least, by the extreme state of nervous exhaustion which results from long continued duty in the trenches with its dull monotony and exposure to incessant noise and constant danger from exploding shells, and with no chance to relieve pent up emotions by any compensatory active operations.

In addition, the soldier has to endure wet, cold, thirst and hunger; he is disgusted by rats, lice and foul odors from dead bodies; he is made miserable by the bites of flies and other insects, frequently horrified by the sight of his comrades killed and mangled, and in many cases, suffering from nostalgia or worried by the turn his affairs at home may be taking. A condition of fatigue develops which is characterized by insomnia, irritability, difficulty in concentration and a tendency to jump at any sudden noise. Going to sleep is made difficult by the appearance of visions of fighting which come up before him whenever he begins to doze off and which he is unable to banish. When sleep is accomplished it is disturbed by troublesome dreams.

Often as the symptoms grow worse there is a loss of the sense of direction of shells, fear is then naturally increased as all shells seem to be coming toward him. Life under these conditions becomes so intolerable that the soldier wishes to escape and, as no other means seem possible, he longs to be captured or wounded. In some cases there is a genuine desire to be killed. When this stage is reached some additional factor, physical or mental, precipitates the neurosis in an acute form and provides the soldier with the relief from duty which he craves. So strong does this desire become that it is said some who receive painful, incapacitating wounds show no signs of suffering or regret, but give way to expressions of genuine joy, and it has been observed that the reception of a wound does not at the time cause a neurosis, although hysterical symptoms centered around this wound may later on develop in those who consciously or unconsciously desire to avoid further active duty. For instance, a soldier enjoys several weeks rest in consequence of having been wounded in the arm. The

idea of recovery with the return to the trenches is distasteful to him, and when the bandages are taken off it is found that he has a functional paralysis of the arm. In other words, the fundamental psychologic basis of war neuroses is a desire for relief from an intolerable situation. In consequence the soldier develops symptoms which affect his ability to fight and serve to keep him away from the trenches. In many instances the bursting shell with its attendant horrors acts merely as the "last straw" in precipitating a neurosis in one whose resistance has already been weakened by the excessive strain to which his nervous system has been subjected. In some individuals with a neurotic tendency, a mild concussion is all that is necessary to bring on an attack.

ESPECIALLY FREQUENT AMONG OFFICERS

In proportion to their number more officers than privates develop war neuroses. The officer has to attend to work requiring mental effort which interferes with his rest and increases fatigue. The responsibility of command and the efforts he must make to hide all signs of fears keep him in a state of constant nervous tension. These additions to the strain the private has to bear favor the more rapid development of that state of nervous exhaustion which is the forerunner of the neuroses in so many cases. They may explain also in part, at least, the relative frequency said to occur among officers of that form of neurosis in which insomnia and anxiety are such important features. This form is apparently a further elaboration of the condition commonly known as neurasthenia which occurs among civilians following certain exhausting influences.

SYMPTOMS

Most of the neuroses that develop at the front are ushered in by some disturbance of consciousness following an explosion. These disturbances may be organic or functional in character. As previously stated the relative importance of physical and psychic factors in their causation has not been definitely determined. Apparently, severe functional neuroses may develop in those who have suffered only slightly from concussion or the inhalation of poisonous gases.

Disturbances of Consciousness.—The disturbances of consciousness vary in different cases from a slightly confused or dazed condition to complete unconsciousness. Some patients remain in a stuporous state for hours and days. Some regain consciousness when brought to the clearing station, but remember nothing of the explosions or subsequent events; others wander from their comrades, and when questioned are unable to account for their movements. In quite a number of instances when soldiers have been brought in unconscious and subsequently

were unable to give any account of what happened, some of the forgotten events have been recovered by hypnotism. In consequence hypnosis has been suggested as a means of differentiating between organic cases and those which have been induced psychologically.

Anxiety Neuroses.—Following the period of unconsciousness a state of anxiety ensues or the patient develops some hysterical symptom. MacCurdy in his admirable article on the war neuroses classifies them in two main types—"condition of anxiety on one hand, and of simple conversion hysteria on the other."[3] The anxiety neurosis is often merely an acute exacerbation of symptoms which have already existed. The soldier who develops this condition emerges from unconsciousness only to pass into a delirious state in which he imagines himself fighting again. Auditory and visual hallucinations of a terrifying nature occur; soldiers are charging toward him with bayonets; mines are exploding under him or he hears shells shrieking through the air, all of which seem to be coming directly toward him. In this situation he may show all the signs of extreme fear; the pupils are dilated, the respirations shallow, the body covered with a cold sweat and trembling violently. Flight may be attempted or the power of voluntary movement entirely lost. In some cases for days the body is maintained in a crouching position while dodging movements of the head and defensive movements of the arms are made. As improvement occurs the symptoms gradually become less severe. Insight is gained into the unreality of the visions, but any sudden noise such as the whistle of a locomotive or slamming of a door is interpreted as an explosion and causes the patient to start with momentary fright. Terrifying dreams relating to fighting occur during the acute stage, and after the hallucinations subside these dreams continue, making sleep a torture. A few minutes sleep may mean the appearance of such a nightmare from which the soldier awakes in terror. Naturally, fear of sleep develops and little is obtained. This increases the fatigue and retards recovery. By degrees the dreams become less severe and their character may change from those in which he is powerless and invariably defeated to those in which he is able to punish the enemy and get some satisfaction from the fighting.

The acute symptoms usually subside after a few weeks, but in some severe cases continue for several months. Sensitiveness to noise is likely to remain for a long time. When all objective symptoms have disappeared the patient is still nervous and fearful that some accident will happen. He has a feeling of incompetency and is likely to consider himself a coward and be mildly depressed.

3. MacCurdy, J. T.: (Psychiatric Institute of the New York State Hospitals) War Neurosis, Psychiat. Bull., July, 1917.

In addition to those mild cases of concussion causing transitory symptoms only and out of which the severe neuroses emerge in soldiers who have already begun to show symptoms of nervous exhaustion, there are a number of severe cases in which the symptoms undoubtedly point to concussion as the chief if not the only causal factor. In these organic cases there is a period of unconsciousness which varies in duration in different cases, but which may last for several days. On recovering consciousness the patient does not, as a rule, remain clear but is likely to pass through a period lasting several days, during which he repeatedly drops off into unconsciousness again. Usually in this stage control of the bowel and bladder reflexes are lost and, when conscious, severe headache is complained of. Following concussion there may be such a complete loss of memory that the patient is unable to remember his name or where he lives. In all severe cases there is poor memory, difficulty in collecting the thoughts and defective orientation. Any mental operation causes fatigue and is likely to be performed incorrectly. After recovering consciousness these patients pass through a delirious stage which does not differ greatly from that previously described for the neuroses following some mental accident superimposed on fatigue, but the anxiety symptoms are likely to be less severe.

Hysterical Cases.—All the hysterical manifestations observed in this war are common among civilians in time of peace. In this disease there is a condition of extreme suggestibility, and it is said that a patient predisposed to it may develop any abnormality of function of which he is aware. The mechanism which brings about the peculiar dissociation of consciousness resulting in these symptoms varies, but the basis for them among soldiers is dissatisfaction with their work and a desire to escape from it. Those whose nervous system has been rendered susceptible by neuropathic heredity more readily acquire the losses and perversions of function characteristic of hysteria, but the surprising number of normal soldiers who have developed them under the influence of war seems to bear out the assertion that it is a disease which is potential in every one.

Preliminary symptoms of nervous exhaustion are not as frequent or severe as they are preceding the anxiety state, although some fatigue symptoms often precede the onset. An emotional shock or physical injury acts as the precipitating cause; often it is a mild concussion or partial burial with earth blown up by an exploding shell. A momentary period of unconsciousness ensues and the patient awakes to find himself with an hysterical symptom. One of the patients observed on Ellis Island had fallen unconscious on the anticipation of a German attack. He awoke mute, and when seen by us some months

later, his voice was little more than a whisper. Mutism followed by some degree of aphonia is the most common symptom. Functional blindness had followed the witnessing of horrible sights, and anomia develops as a defensive reaction against foul odors. These latter symptoms and functional deafness, however, are not very common.

Disturbances of voluntary functions are important; they include paralyses of various kinds, contractures, tremors, convulsive movements and gait disturbances. Many of these cases occur in previously wounded soldiers after recovery from the physical injury. The idea of paralysis following injury is a common one; expectant attention is directed toward the injured member and the symptom develops in consequence of the autosuggestion brought about in this way. Pains, anesthesias and functional visceral and circulatory disturbances are frequent.

There is no sharp dividing line separating the anxiety cases from patients suffering with pure hysteria. Those patients whose disabling symptom is hysterical in nature frequently have suffered from a moderate degree of nervous exhaustion, and complicating the hysteria, they show in a mild degree, some of the signs of fear previously described. On the other hand, many of those in whom symptoms of anxiety are most prominent have as a complication some hysterical manifestation, or such symptoms develop during recovery from the anxiety state. Marked tremors are especially characteristic of this form of neurosis, and gait disturbances are said to be more common as a complication of it. In some degree tremor occurs in every anxiety case. It effects chiefly the hands and feet, but may involve any part of the body.

AIDS IN TREATMENT

Mention of treatment is necessary here only as throwing light on the final outcome of war neuroses.

Rest is of first importance in the anxiety states. Persuasion, suggestion, discipline and reeducation by physical means are successfully used to restore confidence and remove symptoms. Suggestion under hypnotism cures some cases, and in many instances symptoms have suddenly and permanently disappeared, following some sudden surprise or emotional shock.

In all cases an effort should be made to give the patient a clear understanding of the origin and nature of his disorder. The most important step toward permanent recovery has been taken, once the patient is convinced there is nothing fundamentally wrong with him and understands that the symptoms from which he suffers have arisen because of his dissatisfaction with the war.

Psychanalysis as specially understood and applied by Freud and his school has not been used. There seems to be no particular reason for employing this method in the treatment of the war neuroses.

By reason of the nature of these affections and as a result of utilizing the remedial measures mentioned many cases recover even under war conditions. It is generally thought when peace is concluded and all fears of being again forced to fight are dispelled, most cases with previously normal nervous constitution will speedly recover.

NERVOUS STABILITY OF FUTURE IMMIGRANTS

In considering the effects of the war on the mental and nervous stability of future immigrants this likelihood of recovery as well as numerous other factors are to be borne in mind. Undoubtedly, it is true that some strong individuals have collapsed under the extraordinary burdens they have had imposed on them by war conditions, and, both in military and civil life, many weak ones have given way under the strain. Furthermore, the large number of men engaged and the magnitude of the operations has contributed to an excessive prevalence of functional diseases in this as compared with all previous wars. In consequence it might be thought, because of the strain of the war on both the civil and military populations of the nations recently fighting each other that when peace is concluded the immigrants we get from them necessarily will have a somewhat weakened nervous constitution, and, to this extent, at least, the present and future generations of America will suffer because of the introduction of this alien neuropathic element.

A close analysis of the subject, however, seems to show that these fears are not well grounded and the reverse is more likely to be so. Physical hardships and mental trials when they do not destroy are likely to strengthen those who battle with them. Work, discipline, deprivation, self-sacrifice and striving for victory will strengthen the minds and morals of a people that has survived the trials incident to those things. In the case of the weak, war has only precipitated a condition that was potential in the individual, and it cannot be held responsible for producing a condition that already existed. On the contrary, by bringing weaknesses to light, in many cases it will enable us to discover and reject inferior aliens who ordinarily might have passed without question.

Viewed in the light of what has been said then, it seems that in so far as the nervous stability of future immigrants is concerned, we are likely to be benefited both by the strength the war produces and by the weakness it reveals. In arriving at this conclusion, we assume, of course, that in addition to the work previously done to bar undesirable immigrants from the country, special efforts will be made to detect

and reject those whose inferiority has become evident through some accident of the war.

In addition to certain sufferers from neuroses many mild psychotic and borderland cases of insanity who are able to get along unnoticed in civil life, as well as those who have a reduced resistance in their nervous system due to alcohol, syphilis and previous nervous exhaustion, have had their defects brought boldly into relief by the intense emotions and physical strain associated with warfare. The same may be said of those other potentially insane immigrants who, because of some inherent weakness, go to pieces and find their way into an insane asylum soon after their arrival in this country.

It may be mentioned here that a few writers on medico-military problems seem to think that certain types of psychopathic offenders have been improved by the discipline of military life and have become good soldiers. This is greatly to be doubted. It has long been observed that the truly psychopathic character adapts himself poorly to military life even in times of peace, and the results obtained with him in this conflict seem clearly to show that he is unsuited for war. It is probable that nearly all of those so-called psychopathic offenders who became good soldiers were not psychopathic at all but accidental offenders and other transgressors, who became violators of the law, not because of inherent defects of instincts or intelligence, but because of unfavorable environmental influences. The same discipline and regulated life which brings out the true worth of this class tends to expose the defects of the real psychopath.

DETECTION AND CERTIFICATION OF WAR NEUROSES

In dealing with immigrants whose mentality or nervous constitution has been adversely affected by the war, our first care will be to detect them and separate them from the normal as they pass before us for inspection. In any ship-load of aliens the officer who attempts to detect the insane and psychopathic individuals labors under a serious handicap because of the limited time at his disposal, the language difficulty, the lack of histories of cases that might come under suspicion and the natural motive of the alien and his friends for concealing his infirmities from the medical examiners. Again, it is well known that in some stages of certain forms of insanity and in most psychopathic individuals, the conduct and conversation of the patient during any short examination may be such as to enable him entirely to escape suspicion. The importance is thus seen of investigating every case especially alien soldiers discharged as medically unfit, as to the particulars of any past illness to determine whether it was a manifestation of nervous instability. The clue which we often will have that the alien has suffered with some form of nervous disorder will be a valu-

able addition to the resources usually at our command for the detection of this class of diseases. This clue should be looked for and carefully followed in all cases.

After discovering various cases we must determine how they are to be certified, and in doing this for the war neuroses we should be guided in each instance by the possible effect of the neurosis on the patient's future efficiency, and what primary inferiority underlies the disorder itself. In some cases it will be found that no inherent weakness is responsible, the disorder being directly determined by the conditions of warfare.

The diagnosis "war neurosis" of itself will not necessarily exclude any one from the country, and it is not desirable that it should do so. It goes without saying that many of this class will become desirable citizens. Immigrants so diagnosed, however, should at least be regarded as having a condition which may affect their ability to earn a living. Their admission or rejection will then depend on other factors considered along with the medical certificate.

CLASSIFICATION OF UNDESIRABLE ALIENS

In order to make the rejection of the truly undesirable aliens certain, they should be certified in classes whose deportation is mandatory under the law. All the idiots, imbeciles, feebleminded, insane, epileptics, persons of constitutional psychopathic inferiority or with chronic alcoholism come under the "excluded classes." Hence, the importance of diagnosing these conditions as such instead of merely accepting them all as cases of war neuroses pure and simple. It is presumed that no idiot or imbecile has been accepted for service in any of the armies, but many epileptics, psychopathic characters and high-grade mental defectives have been, and these furnish a considerable proportion of those who eventually break down under the strain of military life.

In order to be able to detect and exclude these inferior individuals without including among them some of those whose neurosis from the standpoint of eugenics and the social adaptability of the immigrant concerned is comparatively benign in nature, we should have as clear an understanding as the present knowledge on the subject will allow us of the nature and cause of war neuroses in general, and then make a particular study of the life history and development of each patient who comes before us to determine whether the condition arose on a background of some form of constitutional inferiority. This should be done for the recovered patients as well as for those who still show some symptoms.

All observers admit that individuals who show neurotic tendencies in times of peace are less likely than the normal to adapt themselves

to war; and some think, that except among the neuropaths and psychopaths, few war neuroses occur. Among the symptoms which have been put forward as indicating neurotic tendencies or an abnormal make-up are night terrors and fear of the dark when a child, fear of thunder, a feeling of discomfort or uneasiness when in a tunnel or high place, or undue horror of cruelty and bloodshed and shyness with the opposite sex. However important these symptoms and others of similar nature are as indications of a neurotic constitution, without other manifestations of psychopathic tendencies, they surely cannot be used as the basis for certificate of constitutional psychopathic inferiority under the immigration law. A very large proportion of the civil population in whom there has never been a nervous breakdown and who show no evidence whatever of psychopathic tendencies exhibit one or more of these so-called neurotic symptoms, and to classify them as psychopathic or inferior would be manifestly absurd.

In classifying these cases we should bear in mind then, that the soldier who develops a neurosis away from the firing line or after a few days at the front is more likely to be truly neurotic or inferior than one who gives way under the strain only after long exposure to the special horrors of trench life.

EFFECTS OF SEVERE CONCUSSION

In those persons previously normal who have suffered severely from concussion and have had long periods of illness in consequence, it is likely that considerable damage has been done to the finer structures of the brain, and even after apparent recovery we may expect the mental tension in some cases to be somewhat lower than it was before the injury. Again, it has been noted that following severe cerebral concussion there is often change in character. Such changed persons are invariably worse and never better. They are more egoistic, irritable and selfish than they had been and are prone to outbreaks of rage on trivial causes. On rare occasions actual insanity may result. In some instances the concussion merely lets loose a latent tendency to the disease. In others the injury seems to be solely responsible. The insanity may come on months after the concussion, but a record of the intervening period will always show some evidences of change of character.

Following all cases of "shell shock," whether due to concussion, gas or mental causes and regardless of whether or not recovery seems complete, the individual's resistance is lowered; he is less able to stand the stress of life than he was before, and, in consequence, is more susceptible to mental and nervous disease. But, there is no reason to believe that the germ plasm is affected by acquired con-

ditions of this kind, and in so far as eugenics is concerned, no harmful results need be feared because of the special injury that has been received. Unless procreation occurs during the period of acute illness, it is probable that the children of parents so injured are no more likely to be neurotic than they would have been if the weakness of their parents as shown in the neurosis had never been revealed by their terrible experiences with war.

From what has been said there seems to be no doubt that every case of war neurosis should at least be certified as having a condition which may affect ability to earn a living. The point to determine is when to go further and give a certificate of constitutional psychopathic inferiority or other form of certification which requires deportation.

In some previous wars, there is no doubt that too many nervous cases were regarded as insane. The great interest aroused by the neuroses in this conflict is likely to cause the pendulum to swing the other way. In the inspection of immigrants it is important to avoid this reaction. After the war discharged alien soldiers will come before medical officers of the public health service for examination claiming to have had shell shock or war neuroses, but in reality presenting the whole range of mental and nervous disorders from general paralysis to hysterical tic. The inspection will be poorly done if a stock diagnosis of "shell shock" or war neurosis is accepted or if all war neuroses are regarded as of equal significance. While many of these aliens will make useful citizens some of them, if admitted, will become a financial burden to the state; others, in addition, will transmit neuropathic taint to future generations. We should then be prepared to deal with each case on its own merits so that the purposes of the immigration law may be fully executed and the best interests of our country served. An effort should be made in all cases to determine whether a certificate for feeblemindedness, epilepsy or insanity can be issued.

CONSTITUTIONAL PSYCHOPATHIC INFERIORITY

When all afflicted with these disorders have been disposed of there will remain a certain number who can be certified as persons of constitutional psychopathic inferiority. By reason of the application of this term in law and the relationship its manifestations have to war neuroses some mention of it here is necessary, but the various types of character that may be included in this class will not be discussed at length. Often a full life history is necessary before the diagnosis can be made. In the usual inspection of immigrants this is not often sought for because the patient does nothing to arouse suspicion of his abnormality.

Lack of adaptability to war is an important clue to the constitutionally inferior. Among soldiers malingering, desertion and other breaches of discipline as well as the development of neuroses often indicate a deep-seated perversion from the normal mental and nervous constitution. Some of the anomalous characters which may be included in this class show defective intelligence, but aside from these there is an important group in the borderland between sanity and insanity who are "failures of mental adaptation" and have a tendency to become actively disordered. Here we find the constitutional psychopaths and inferiors, the moral imbeciles, the pathologic liars and swindlers, the defective delinquents, many of the vagrants and cranks and persons with abnormal sexual instincts. The dividing line between these various types is not well defined and for purposes of simplicity in classifying the mentally abnormal immigrant they may be included in one general class and certified as cases of constitutional psychopathic inferiority.

Persons with physical defects or anomalies alone and without mental peculiarities should not be certified as constitutionally inferior. A certificate of this kind means that the individual so certified has some instability of his nervous system which affects, or is liable to affect, his psychic life.

These individuals may have a fair amount of intelligence, but they are emotionally unstable and show weakness of judgment, eccentricities of behavior, undue suggestibility and defects of character. Their make-up favors the development of psychoses. They are easily unbalanced and under the stress of difficult situations or even of ordinary social conditions, episodes of excitement or depression occur or they may have hallucinatory attacks or develop paranoid trends. In addition to the types mentioned in the foregoing, the regulations governing the medical inspection of aliens says that any well defined case of psychasthenia or hysteria should be certified in this class.

PSYCHASTHENIA

Under the heading psychasthenia are included those morbid personalities who are afflicted with irresistible ideas and fears. The phobias, obsessions, doubts and impulsions characteristic of this disease are evidence of a deep seated "psychopathic inferiority" which is transmitted by heredity. The symptoms take on a variety of forms and are of varying degrees of severity. Common among them are the various phobias such as fear of high places, enclosed spaces, open spaces and crowds. There may be real apprehension arising from fear of all kinds of disease and danger, which in most cases the patient on reflection recognizes as unreasonable and absurd but which he

nevertheless is unable to resist or control. Among the symptoms that make these patients miserable are fears that they will commit suicide, or a crime, or make obscene remarks, or be guilty of some other indiscretion. The psychasthenic has no impulse to do these things; the crimes would be repulsive to him and in consequence he seldom, if ever, carries out the action he fears. On the other hand, there are patients who have real morbid impulses the execution of which gives a certain sense of satisfaction. To this class belong those who have an irresistible desire to steal or set fire to things and other so-called manias.

In studying the personality of a suspected immigrant to determine whether he is inferior under the meaning of the immigration law, we should bear in mind that every obsession or impulse that might be called psychasthenic is not of itself sufficient to justify a certificate of inferiority. The degrees of this condition shade off gradually from those who are but little separated from insanity to the normal. Beyond a certain point in the scale, a certificate of constitutional psychopathic inferiority would no longer be justified. In defining this point no hard and fast rules can be drawn. It is necessary for the officer to exercise his judgment in individual cases.

Any symptom or set of symptoms that disables, distresses or brings the patient in conflict with the law should be regarded as evidence of psychopathic inferiority. Many of the milder obsessions and impulsions probably mean nothing. The man who has an impulse to count windows and other objects, or who must rise from bed to see whether he really locked the door, or the doubter given to wondering about the nature and existence of God and other abstract matters is not because of these things alone to be considered constitutionally inferior. It is probable that in many cases these and other mild symptoms similar in nature are acquired by faulty habits of mind and in a biologic sense they do not indicate any deviation from the normal. On the other hand, the person always has an inferior personality, who, after passing his friend on the street is tortured by the idea that he might have killed him, thinks he probably did kill him, and is unable to banish the thought from his mind, although he knows full well that he has done no such thing. Symptoms like the foregoing or other manifestations of psychasthenia of equal importance arise always on a background of congenital psychopathic inferiority, and we need not hesitate about certifying immigrants who are or have been afflicted with them as cases of constitutional psychopathic inferiority.

HYSTERIA

Hysteria in its many manifestations is of less importance as an indication of psychopathic inferiority than the disorder just described. The constitutionally neurotic readily acquire the disease, and in them its manifestations are more varied and it is more difficult to control than in persons who deviate but little, if at all, from normal nervous stability. Many of the severe cases arise through the instrumentality of heredity and are indications of degeneration, but with sufficient provocation disabling symptoms of this disorder may occur in persons of faultless heredity and normal nervous constitution.

In a paper of this scope it is not possible to discuss the manifold symptoms of hysteria and point out the various combinations of symptoms that may be taken as evidence of constitutional psychopathic inferiority. The truly degenerate hysteric has unstable emotions and his intellectual processes deviate in several particulars from the normal. Before issuing a certificate of inferiority we should look for these stigmata in addition to the evident derangement of physical functions. A study of the family history to determine the presence or absence of neuropathic heredity will throw light on many otherwise doubtful cases.

Monosymptomatic hysteria is much less likely to be evolved from an inferior constitution than other forms in which numerous changing symptoms occur. For this reason it is more amenable to treatment, and when cure is effected it is more likely to be permanent. This is illustrated by some cases occurring among soldiers at the front in whom one symptom such as mutism or paralysis quickly and permanently disappears. The persistence of symptoms should not, however, be regarded as a sign of constitutional inferiority. By faulty methods of treatment or for other reasons cure is often delayed in what might otherwise be simple cases. With such a patient the idea of permanent disability becomes so deeply rooted in his mind, that the symptoms have a tendency to become fixed and are extremely difficult to remove even with the most careful treatment.

A certificate of constitutional psychopathic inferiority should not be issued lightly. When we study an immigrant with the end in view of giving a certificate of this kind we should bear in mind that within certain limits a nervous type of temperament is not pathologic, and even when the bounds of normality have been passed psychopathic inferiority is not in all cases to be inferred.

In speculating about things in the mental field there is hardly any limit to the tendencies and types of character that have or might be called psychopathic, but when practical results are sought for and the law is to be complied with the circle embraced by this definition must be restricted within reasonable limits.

Obituary

JAMES JACKSON PUTNAM
1846–1918

With deep sorrow we record the passing of Dr. James Jackson Putnam, who died of angina pectoris on Nov. 4, 1918. A more adequate sketch and appreciation will appear in a future number of THE ARCHIVES, but it is fitting that we should now pause and give a thought to the personality and career of this great man.

Dr. Putnam was born of distinguished ancestry, in Boston, Oct. 3, 1846. After a liberal academic and medical education he at once became a pioneer and a leader in his chosen field of neurology. For the rest of his life he was a leader and like all great leaders an ardent follower of his ideals. Having a great store of accurate knowledge, he was as well a real thinker, a man of ideas and of sound judgment in the application of knowledge to practice. In short, he was a wise man as well as a savant. For his having lived, the science of medicine is more profound, the art of medicine finer and more exact. And in particular, American neurology deprived of Dr. Putnam's contributions, would be many steps behind its present creditable place. But his almost unique position was not that alone of a fine scientific machine and a great intellectual power. He was a big souled, lovable gentleman. None can think of his attainments and his use of them without an inner uplift.

Abstracts from Current Literature

CONTRIBUTIONS TO PSYCHOTHERAPEUTIC TECHNIC THROUGH PSYCHOANALYSIS. Smith Ely Jelliffe, M.D., Psychoanal. Rev. January, 1919.

Stressed is the need of extension and refinement in the technic of psychotherapeusis, made apparent by the increasing mass of material referred to this field for help and with a stimulus toward such a goal presented in the striking advance of procedure in other branches of medicine. A brief generalization of this division introduces Freud's contribution, here summarized in a relation of therapeusis to the affect.

The importance of psychoanalysis for further departures in therapy justifies a condensed presentation of its main aims. Psychotherapy is an attempt to get back into the stream of the psychic movement and depends on reeducation and redevelopment in the sense of a readjustment. The analysis of dreams should be pursued, not merely as a means of recovering buried complexes, but, following Jung, the prospective trends involved in dream structure are to be utilized as suggesting a possible constructive effort toward a better adaptation, for the dream presents an apt index of such wishes and the manner of directing them. Technical advances in therapy, then, consist not merely in disorganizing unconscious tendencies, but in a direction. A further specification of possible ways to effect this follows. In the location of the point of break a closer attention is desired both to effect a release of the fixation and to discover implied suggestions there resident, for redirection. The lines of individual interest are not to be forgotten nor may one overlook in this location the particular compensations here brought about, defining the structure of the neurosis beneath which are to be discovered the less obvious clues for further procedure.

In view also of the obvious attempt of the neurotic to mend himself, Jelliffe defines reading as of service, not for diversion or literal instruction, but rather as offering for appropriation by the patient better openings for wider interests. Instructon may give also a clearer handling and interpretation of new and definite facts to supplant the constant wandering in the midst of the diversities and shadows which form the usual neurotic content. A better specification of analytic help and its function is here defined, a thing of importance in view of current loose psychotherapeutic advice. Too often there has been missed any insight into the patient's deeper unconscious interests whose diversity defines an equal diversity in respective mental evolutions.

A brief reference follows to the endocrinal relations in which the psychic impulses, driving to individual and social ends, indicate the mind as a field where the disturbances reside and the initiating factors arise. The somatic and environmental influences are thus placed in a larger setting throughout which operates the striving and affects of the individual.

In a definitive way the writer, in the paradigma of praecox, develops a method in which, beside the patient, there is also present a trained attendant, between whom and the analyst is carried out a discussion to which the patient may more easily adjust because of his position outside of it. The adjustment is made more possible by way of the excessive affect thus being permitted a gradual release. While praecox presents a problem of special affect situations

with a maximum withdrawal of interest and a total inclusion of all affect at one site, guarded under conditions of intensity, other situations occur in the psychoneuroses where similar modifications of technic are applicable. Nor is the applicability to be derived only from the type of neurosis, but also from the general characteristics of the patient. That is, the point of approach to the patient is to be solved with anything but a universal formula.

Some such flexibility of concept as to procedure is needed if the technic of psychoanalysis is to evolve. Hence the readily apparent significance of this article.

PARKER, New York.

THE REFLEX FUNCTIONS OF THE COMPLETELY DIVIDED SPINAL CORD IN MAN, COMPARED WITH THOSE ASSOCIATED WITH LESS SEVERE LESIONS. GEORGE RIDDOCH, M.D., Brain, Lond. **40**: Parts II and III, 264-402, 1918.

The numerous cases of spinal injury during the war have given an unprecedented opportunity for investigating the functions of the cord, and Riddoch has availed himself of the chance to study very carefully and thoroughly a number of cases of transsection of the cord proven by operation or necropsy. Studies such as these have given the *coup de grace* to the so-called Bastian-Bruns law and have proved that under favorable conditions, the part of the cord below the level of the lesion not only can recover its reflex functions but does often become highly excitable. Full credit must be given to Sherrington and his supporters who first clearly stated that the flaccid paralysis which occurs after complete division of the spinal cord in man and the higher apes —which differs so markedly from the condition of the isolated cord in lower animals—is due to the greater intensity of "spinal shock," and that the apparent difference is only one of degree. All this and more is clearly set forth in Riddoch's historical review of the subject.

The stage of spinal shock corresponds to the period of muscular flaccidity and, in three of Riddoch's patients, lasted from one to three weeks (a much shorter period than in our experience is usually the case). During this period myotatic irritability though diminished, is never lost, although all voluntary muscles below the level of the lesion are paralyzed and all cutaneous and tendon reflexes are absent except that reflex contractions of the anal and vesical sphincters can still be obtained. If the lesion is above the sixth thoracic segment all abdominal visceral sensations are absent; if the section is between the sixth and eighth thoracic, abdominal sensations are referred to the epigastrium.

In the stage of reflex activity, flexion reflexes elicited by scratching or pricking the soles of the feet are usually the first to appear. Whether or no they are unisegmental, as claimed by Gordon Holmes, is still an open question. They persist for a varying period of time and are followed by upward movements of the toes accompanied sooner or later by contractions of the flexors of the hips and knees, the adductors of the thighs and the dorsi flexors of the feet, and the "mass reflexes" contractions of the abdominal wall muscles, evacuation of the bladder, sudden and profuse sweating, etc. The earliest involuntary movements to be observed in the legs are flexor in character—the elementary reactions to nocuous stimulation. During this stage of increased reflex activity, it is possible to obtain healing of bed-sores. The patients may remain in this condition for an indefinite period, but sooner or later pass into the last stage. In the third stage—usually due to toxic febrile complica-

tions and an indication of approaching death—there is a gradual failure of the reflex functions, the threshold value of stimuli is raised, mass reflexes can no longer be evoked, flexor spasms of the lower extremities disappear; there is muscular wasting, a greatly increased tendency to decubitus and perhaps retention of urine and feces. Finally no reflexes of any kind can be obtained.

In a separate chapter, Riddoch makes a comparison between the manifestations in complete division of the spinal cord and those found in some less complete lesions. In certain cases of incomplete injury to the spinal cord the application of a nocuous stimulus to the sole of the foot causes a flexion reflex of the lower limb, but the reaction differs from the "mass reflex" of complete division in that the flexor movement is less violent, that it is invariably accompanied by a crossed extension reflex, that the abdominal wall is involved in the motor response with only intense nociceptive stimuli and that the receptive field of the flexion reflex extends only up to the knee.

In complete transsection of the spinal cord, there is never an active extension of the lower extremity when the foot is dorsi-flexed after the limb has been passively flexed, and there is never an extension of the lower extremities by nocuous stimulation of the upper parts of the thighs, of the perineum or genitals. These extensor movements correspond to the "extensor thrust" described by Sherrington in decerebrate and spinal animals. The clinical picture, from the reflex point of view, resembles the "paraplegia in extension" described by Babinski and Walshe, in contrast to the "paraplegia in flexion" of complete division of the spinal cord.

Finally, Riddoch devotes a chapter to a consideration of reflex activity—to the factors which influence it, to muscular tonus, and to the reflexes as adapted reactions. The quality of the stimulus is an important factor in determining the character of the reflex movement. Nocuous stimuli are most effective and the stronger the stimulus, the more vigorous is the reaction. A stimulus in itself subliminal, if repeated several times in quick succession, will evoke a reflex action. The locality of the stimulus is of more importance in incomplete than in complete lesions. General fatigue, prolonged states of toxemia or septicemia from urinary sepsis, bed-sores, etc., have a profound effect in depressing the intramedullary parts of the reflex arcs which latter have an important bearing on reflex activity.

In the stage of muscular flaccidity in transsection of the spinal cord, the paralyzed muscles are without tone; in the stage of exaltation of reflex activity, the tone of all the paralyzed muscles in the resting state remains constantly below the normal, but the flexor muscles in both the resting and the contracting states show more tone than their antagonists. These findings correspond to Langelaan's classification of muscle tonus—an absence of the "plastic component" and a retention of the "contractile element" in the paralyzed muscles after complete division of the spinal cord.

The author's views on the reflexes as adapted reactions can be summed up in his own words that the higher centers "dominate the spinal cord in man more than in animals; but the spinal reflex mechanism of the elementary functions of protection, reproduction and excretion, which are the oldest in the phylogenetic scale, still retain some power of autonomous action."

[The author follows Sherrington in his views and opinions. There is much in the article that is proven, some statements that are still a subject of contention and some that must be considered purely speculative. The paper is one that contains much that is interesting and suggestive. The detailed clinical histories are convincing.]

ELSBERG, New York.

ON THE FINER STRUCTURE OF THE SYNAPSE OF THE MAUTHNER CELL WITH SPECIAL CONSIDERATION OF THE "GOLGI NET" OF BETHE, NERVOUS TERMINAL FEET AND THE "NERVOUS PERICELLULAR NET" OF HELD. KIYOYASU MARUI, J. Comp. Neurol. **30**: No. 1, p. 127.

The author has approached the subject of the finer structure of the synapse by applying to the giant Mauthner cell of certain fish the metal impregnation methods of Cajal, Bielchowsky and Levaditi. Other methods were employed, but practically all of his observations and conclusions are based on the results by these three. The application of the Levaditi method for staining the spirochetae to the finer structure of the nerve cell is held to be new.

The author reviews in some detail the various opinions and interpretations of the fine netlike incrustation which can be demonstrated at the surface of the nerve cells. This is the structure which Golgi observed in specimens stained by the method which bears his name and which Bethe called the Golgi net in his honor. Apathy described a network of neurofibrils in the invertebrates formed by multiple division and anastomosis of the components of adjacent fibers. Bethe considered that the Golgi net of the vertebrates was the analogue of this neuropil of Apathy's and claimed a continuity existed between the terminal arborization fibrils of one cell and the intracellular neurofibrils of the cell with which it was associated. Held from his studies claimed the existence of two types of investing network around the cell, one of which was made up of anastomosing telodendria, that is, of nervous structure, and the other the Golgi net which he considered to be not of nervous nature. These views, all of which include an anastomosis of nerve fibrillae from various origins and hence were incompatible with the theory of the structural unity of the individual nerve cell as outlined by Waldeyer in the neuron theory, were vigorously opposed by Cajal who by means of his own methods claimed to be able to resolve Apathy's and Bethe's network into a delicate plexus of fibrils and to demonstrate the continuity of the Golgi net with the "Fullnetz" of Bethe which occupied the spaces away from the immediate surface of the nerve cell. Cajal also denied the direct continuity of terminal filaments with intracellular fibrils and described knobs as ends of the former which lay in contact with the surface of the cell.

Bielchowsky, using his alkaline silver method, saw the terminal knobs which Cajal had observed, but resolved these knobs into a reticular structure and reported that he could demonstrate neurofibrils entering the nerve cell body. Held considered the Golgi net to be continuous with the "Fullnetz" of Bethe and to be of plasmatic glial structure.

The author discuses his own findings in the Mauthner cell under three general heads: (1) The neurofibril structure; (2) the Golgi net, and (3) Held's nervous terminal net, the nervous terminal feet and neurofibril continuity.

He finds little evidence to support Cajal's description of a true net formation of neurofibrils within the cell, but finds them running a straight or winding but continuous course with far too few bifurcations to suggest the formation of a real net.

In the study of the Golgi net the author found that some of his preparations by the Levaditi methods gave exceedingly instructive pictures in that there was a more or less selective staining reaction, the neurofibrils both terminal and intracellular staining a dark brown while the Golgi net and the "Fullnetz" both stained a yellow. This gave opportunity for observation of the relation of these structures which could later be substantiated by Biel-

chowsky preparations counterstained with eosin. The yellow material formed a three-dimensional network whose meshes were four, five, six, and even seven and eight cornered. Where the net lies in approximation to a nerve cell each point of junction of its elements, the nodal point, is connected to the cell body by a thread or beam. This network is reported to be continuous with the perinuclear glia protoplasm. Partially or completely embedded in these plasmatic glial strands are darker stained strands which are interpreted as the arborizing terminal fibrils of distant neurons. That these darker structures are not glia fibrils is indicated by the fact that they are not stained by the selective neuroglia methods and that they could be followed back to a myelinated fiber.

It is unfortunate that we do not possess a technical method which will stain these structures with sufficient intensity for study and at the same time selectively. The metal impregnation stains are irregular in their action and their incrustations frequently obscure the relation of two closely approximated structures. The discordant opinions of various investigators on the structure of the Golgi net is reminiscent of the earlier conception of the neuroglia fibril as a prolongation of the glial cytoplasm derived from metal impregnation methods, the fallacy of which is easily seen when the cells and fibers are stained either by the Weigert method in which the fiber and cytoplasm are differentiated chiefly through the intensity of their coloration or by Mallory's phosphotungstic acid hematoxylin which produces actual selective coloration. Marui's success with the Levaditi method in this regard, if it proves that it can be repeated readily and is not simply an occasional lucky result of the impregnation, will prove to be a distinct advance. The finer structure and reactions of this "tertium quid" of the gray matter, the plasmatic neuroglia, is a subject of live interest both to the morphologist and the neuropathologist. It interferes to a considerable extent with the application to the gray matter of many staining methods which prove most instructive in studying medullary changes and at the same time is most reluctant to take a clear stain itself.

As the foregoing descriptions indicate, the present observations do not accord with Held's view of a pericellular nervous network. No interlacing or intercommunication of neurofibrils is recorded. The terminal feet in suitable preparations resolve themselves into a finely fibrillar structure which does not, however, show evidence of forming a true network. From these terminal feet there project inward into the cell body fine neurofibril extensions. In Cajal preparations this penetration was made out, but fusion with intracellular neurofibrils could not be determined. In Bielchowsky preparations, however, these fine fibrillar projections are reported as fusing with the intracellular neurofibrils, and this not only on the dendrites but on the cell body as well. As evidence that these are not dentritic processes of the cell but rather the telodentritis of distant cells the author claims to have followed them back to myelinated fibers. Unfortunately the reproductions of his photomicrographs illustrating these points are so lacking in clearness of detail that they are by no means convincing.

We are accustomed to consider interneuronic continuity as an established fact in the asynaptic or primitive nervous system of the medusa and in its homologue in the plexus of Meissner and Auerbach, the vascular plexuses, etc., of the higher animals, and here the morphologic evidence is supported by that derived from physiology, wavelike spread of discharge, reversibility of direction of discharge, etc. In the central nervous system, however, the physiologic evidence points toward a surface of separation between function-

ally connected neurons. Sherrington in his "Integrative Action of the Nervous System" gives eleven points which differentiate nerve trunk conduction from reflex arc conduction which he interprets as indicating a physical surface of separation, though not necessarily a demonstrable membrane whose possible activities he outlines in a classical paragraph. Such a surface of separation would be entirely consistent with the results reported in the present article by the Cajal method, that is, between an invaginating neurofibril and the cytoplasm which it is penetrating, but could hardly be brought into harmony with an actual fusion of neurofibrils of extracellular and intracellular origin such as is here described and illustrated by drawings. Considering the constant dangers of interpretation which attend the methods of metallic impregnation it would seem not unreasonable to demand that this observation be confirmed by extension to other types of synaptic nervous tissues, and that it be demonstrated by more than one method before it becomes necessary to reconstruct our hypotheses of the synapse to meet in a new form the known physiologic facts.

ORTON, Philadelphia.

A CONTRIBUTION TO THE STUDY OF EPILEPSY AND BORDER-LINE CASES. H. OPPENHEIM, M.D., Ztschr. f. gesam. Neurol. u. Psych. **42:** Nos. 3, 4 and 5 (July 31) 1918.

During the past twenty years an attempt has been made to differentiate a variety of convulsive attacks from epilepsy, which were formerly classed as either epileptical or hysterical. As early as 1894 Oppenheim called attention to a variety of convulsions with loss of consciousness, which he regarded as neither hysterical nor epileptic. In 1903 he again directed attention to his former observations, remarking that there was a third variey of convulsive attacks which occurred in individuals with a neuropathic-psychopathic diathesis—individuals who suffered from congenital neurasthenia.

In a later contribution (1905-1906) on psychasthenic convulsions he emphasized the following points:

1. These patients are not epileptics but are to be grouped as neurasthenics and psychasthenics.

2. That these manifestations never occur spontaneously, but are produced by some special exciting factor. These exciting conditions heretofore brought on states of apprehension, congestion or vertigo; their frequent repetition, however, culminated in a convulsive attack.

3. These conditions form, as a rule, only an episode in the course of the affliction; in other words, the attacks are isolated and it may happen that an individual may experience them but once or twice in a lifetime.

4 The attack itself may be typically epileptic, but it frequently happens that there are deviations, for example, that in spite of a profound state of unconsciousness the convulsions do not occur or are confined to a single group of muscles or persist after consciousness has returned. Then again the conditions may be similar to petit mal or to the psychic equivalent.

5. Notwithstanding frequent repetitions of the attack the memory and intelligence are in no wise affected or undermined.

6. The attacks are amenable to therapeutic influences although measures directed toward improving the neuropathic diathesis are more efficacious than bromids.

Finally, it was to be remembered that the field of psychasthenic convulsions was an extensive one and ordinary exhaustion neurasthenia is not sufficient to produce these conditions.

This exposition, according to Oppenheim, contains those points on which Bratz based his so-called "affect epilepsy," and likewise those on which Friedmann later developed his "restricted forms" of convulsions. The tendency to restrict the concept epilepsy is traceable to Friedmann's observations. The convulsive attacks described by Friedmann contain three or four features in common with the psychasthenic convulsions described by Oppenheim. These are:

1. That they may appear as attacks of petit mal.
2. That in spite of prolonged duration and frequent seizures the mental faculties remain unimpaired.
3. That the exhibition of bromids is ineffectual.
4. That the manifestations may be transitory.

The essential features of the affection described by Friedmann are:

1. Occurrence in children and juveniles; frequent repetition of attacks (up to 100 a day); loss of consciousness incomplete.
2. Short duration—10 to 20 seconds.
3. Absence of convulsions.
4. Absence of pupillary fixidity.
5. No biting of tongue.
6. No sphincter relaxation.
7. Occurrence on a basis of neuropathic-psychopathic diathesis.
8. Benign course of the disease, particularly unimpaired mentality and possibility of a permanent cure.

Friedmann realized how difficult it was to make a sharp distinction between this variety of attacks and those transitory forms of neuroses associated with clouding of consciousness and pointed out the similarity it had to the narcolepsy described by Westphal and Gelineau; at the same time admitting that similar conditions may develop in hysteria and epilepsy. The attempts of Friedmann to establish a relationship between the frequently repeated minor attacks described by him and epilepsy brought forth considerable opposition.

Narcolepsy is an independent neurosis to be differentiated from epilepsy, hysteria and likewise the attacks described by Friedmann. It differs from the latter in that it seldom occurs in children but usually in adults between the ages of 30 and 40 and mostly in men. Its essential feature is an overwhelming drowsiness that may come on at any time. It is like a normal sleep or cataleptic staring. In this condition, which lasts from a few minutes to half an hour, an automatic occupation may be carried on and obstacles may be successfully avoided. A peculiar feature of this condition is that it may be brought on by hearty laughter, although tickling will not produce it. Gelineau was the first to describe this so-called geloplegia—laughing convulsions terminating in sleep. Narcolepsy and geloplegia are to be regarded as nosological entities and must be differentiated from pyknolepsy and epilepsy, although their general similarity cannot be overlooked.

Oppenheim presents a study of sixteen cases. The first corresponds in minutest detail to the picture described by Friedmann. Inception in childhood, frequent repetition of attacks, duration fifteen seconds, no profound disturbance of consciousness, no manifestation of motor irritability, no falling, no injury, no involuntary urination, no impairment of mental development in spite of the six years duration of the disease, and finally, condition not influenced

by bromids. A disease of this character differs beyond a doubt from petit mal.

The second case resembles the description of Friedmann, though it presents two deviations: (1) the occurrence of motor irritations, and (2) prolonged attacks amounting to status pyknolepticus, analogous to the status epilepticus. This case is to be regarded as one of pyknolepsy.

The third and fourth cases present many points of similarity although there are a few deviations In the third there was pupillary fixity and some deformity of the skull There were also local syncope and habitual bradycardia. Likewise the attacks continued to recur notwithstanding that the patient had reached her twenty-seventh year. In the fourth case there are more marked manifestations of motor irritability, also postparoxysmal amnesia. This case also presented slight thyroid enlargement. In the family history the fact was brought out that the parents were related (consanguinity).

To complete this series a fifth case—purely supposititious—of genuine epilepsy is to be added. Then the extremes one and five are separated by an unbridgeable chasm so completely that they may be spoken of as two diseases essentially different, which is in accordance with the teaching of Friedmann. On the other hand, one cannot fail to recognize that these five cases cover a territory in which the transition is so gradual that there remains no differentiating factor between pyknolepsy and epilepsy. One is compelled, then, either to limit the comprehension of the concept of epilepsy in such manner that symptom complexes as found in narcolepsy and pyknolepsy would be excluded. Then, it must be admitted that there is no sharp differentiation to be made and that there are disease varieties and disease forms which belong to borderline conditions, but which gradually blend. Or it will be necessary, on the other hand, to extend the concept epilepsy to such a degree that it will include these various ailments with their resemblances and differences. In this event it must be admitted that epilepsy is a disease of changeable character and such variegated course that there are severe and mild varieties, benign and malignant, curable and incurable, and that each individual case must be judged separately. It is Oppenheim's opinion that it would be more practicable to accept the first alternative and recognize epilepsy, pyknolepsy and norcalepsy as distinct entities, admitting at the same time, however, that there are no sharp lines of demarcation in the field of the neuroses.

The next three observations have in common convulsions of a cortical epileptic type. These three cases have only a superficial relationship and can be utilized if proper caution is observed. The first case is one of unilateral convulsions of psychogenic origin. Although there are no evidences of hysterical stigmata, the fact that an attack could be induced by hypnotism seems to indicate its psychogenic character. This case is therefore regarded as a cortical epilepsy of hysterical or functional form. From these three cases the following essential points are deduced: (1) That these manifestations predominate in infancy and youth, and that the frequent recurrence of the attacks are weight-bearing factors. (2) The atonia and paresis which followed the attacks is not to be attributed to a tissue-destroying disease process, but should be regarded as an exhaustion symptom.

The ninth case shows how difficult it is to judge the essential and causal factor of convulsive attacks. Although the described complaints in this case and the attitude and nature of the patient point to a hypochondriacal character, the convulsions are typically epileptic: profound unconsciousness with cyanosis, stertorous breathing, fixed pupils and biting of the tongue. The attacks

occur at night. The motor phenomena, tonic and clonic convulsions, predominate on the left side. A slight period of confusion precedes the complete return of consciousness. There are some features in this case which seem to indicate that there exists here a combination of hypochondriasis and epilepsy. Certain other features militate against calling it a case of genuine epilepsy: (1) Unconsciousness and convulsions do not manifest themselves at once, but the patient is awakened by some other difficulty, and (2) he feels that an attack is imminent, nevertheless he has time to sound a warning and get to his bed. Although this may take but a short time it is, nevertheless, uncommon in genuine epilepsy. Another peculiar feature of this case is the fact established by careful observation that the temperature of the left side of the body is higher than the right by about 1 C.—an occurrence which must be regarded as a vasomotor disturbance and which cannot be disregarded on account of the unilateral character of the other phenomena.

The next two observations are to be regarded as psychasthenic convulsions The one may be regarded as rarely occurring epileptic attacks in a neuropsychopath. But it must be noted that in the three attacks this individual had, two were the result of deep emotional perturbation; and that he had the personality of a psychopath and not of an epileptic. The vertigo that troubled him was not epileptoid but the result of phobias (impulses) and occurred only during meals. The other is that of a man, aged 28, who has led a pampered existence from his earliest youth, comes of a neurotic family, is a psychopath, and suffers from tabophobia. He is given to sexual excesses and perversions. One attack from which he suffered was epileptic in character and, notwithstanding that he may experience other attacks, it is hardly correct to regard him as an epileptic. The third had epileptic attacks from his fourth to his seventh year when they ceased and he became subject to *tic generale*. These continued up to the fourteenth year, when there was a three-year interruption until profound emotional excitement brought them them on again. This case may be regarded as a myoclonous epilepsy, but the observations were too limited to confirm the diagnosis.

The fourteenth case presents difficulties on account of certain phenomena. The case is that of a man suffering from attacks most probably epileptic in characetr, but during the convulsions the consciousness was not lost, although there may have been clouding; and then, in spite of seven years' duration, there was no impairment of intelligence and memory. Oppenheim regards this as an exceptional case of genuine epilepsy which terminated in status epilepticus, epileptic coma and finally death.

The last three cases present an unusual phase. In two patients formerly healthy, convulsions were brought on by cold douches to the spine. In the third the inception of the convulsive attacks is attributable to treatment for obesity with the Bergonies apparatus. The attacks followed two weeks after the interruption of a course of thirty-six treatments. The attacks are epileptic and have been recurring every three months for the past four years.

GOTTBRATH, San Francisco.

THE TREATMENT OF CASES OF SHELL SHOCK IN AN ADVANCED NEUROLOGICAL CENTER. WILLIAM BROWN, M.A., M.D., Oxon., D.Sc., London. Lancet **2**:197 (Aug.), 1918.

Dr. Brown presents the results of a large experience in advanced neurologic centers in France, where he treated some thousands of cases of functional nervous disease, following largely the teachings of Déjerine and Freud. Of

the cases which he saw within forty-eight hours of the breakdown, he was able to return 70 per cent. to duty in two weeks. He feels that his success was due more often to prevention than to cure. Working on the basis of repressions and emotional conflicts he employed modified hypnosis to "bring up" the causes of the neurosis and once presenting them to the patient carefully analyzing them and making him familiar with them. He put the patients into a light sleep and directed them to tell him of the scenes encountered and experiences lived through, then gradually brought them out of the hypnotic state, at the same time connecting the experiences with the daily life as much as possible; in other words, making the repressed emotional reaction appear as ordinary as possible. This mental analysis, thoroughly done at the first hypnosis, was all that was necessary, as a rule. No suggestion other than that of encouragement and assurance that the patient would get entirely well was used. He established a high order of enthusiasm for the recovery of the patient and convinced him by his own convictions. It was very essential to make a thorough and immediate neurologic examination of the patient as soon as received and assure him earnestly that no organic condition existed, thereby removing fears of permanent disablement. Getting the patient well in hand early in the disease he was able to counteract any mechanical suggestion which might take place. The conversions and repressed emotions were "abreacted" before they had become fixed; dissociations were cleared up; the patient had no time to fix his symptoms. During the analysis under light hypnosis the deafness, mutism, blindness, paralysis, or other manifestation of the disease was usually cleared up, and there were no recurrences. This applied to the cases of hysteria, but in the neurasthenic cases he found that mental analysis without hypnosis, and with reeducation were the essential points of attack. In both types of case the usual hygienic measures, physical and psychical, were carried out. Occupation during convalescence was a recognized aid. In the lighter cases of hysteria, reassurance, conviction and confidence in the physician, together with persuasion was all that was needed to effect a cure.

PATTEN, Philadelphia.

THE AUTOMATIC BLADDER, EXCESSIVE SWEATING, AND SOME OTHER REFLEX CONDITIONS IN GROSS INJURIES OF THE SPINAL CORD. HENRY HEAD, M.D., and GEORGE RIDDOCH, M.D., Brain, Lond. **40**: Parts II and III, 188-263, 1918.

In soldiers with spinal injuries the authors have studied a number of the phenomena observed after total transverse division of the spinal cord and record the results of their investigations. The paper, as is customary in publications which appear in *Brain*, is divided into several "chapters."

Chapter I deals with the automatic bladder. Under favorable conditions, after complete division of the spinal cord, the bladder may begin to expel its contents automatically within 25 days of the injury, while in unfavorable cases —in chronic sepsis due to bed-sores, cystitis or pyelitis—automatic urination may never become established and continued catheterization may be necessary. In all cases in which the lesion is above the lumbar region, if the spinal cord recovers its functions after the first period of shock, it may pass into a condition in which peripheral extravesical stimuli may influence automatic evacuation of the bladder. Thus scratching the sole of the foot, or the thigh or the abdominal wall causes a flexor spasm and the bladder to expel its contents when the latter scarcely amounts to one-half of the amount otherwise necessary to produce a contraction of the muscular wall. After destruction of the

lower lumbar and sacral roots, the bladder may evacuate its contents automatically when a certain distention of the organ has been reached, but this automatic micturition can, of course, no longer be influenced reflexly by afferent impulses. The patients, however, may be conscious of distention of the bladder and may experience the pleasant sensation which normally accompanies its evacuation. A certain amount of distention acts as an adequate stimulus to evacuation, but when the bladder is acting automatically, deep breathing or pressure on the abdominal wall may cause it to expel its contents before they have reached sufficient volume to be otherwise an adequate stimulus. Irritation of any part of the body above the level of the lesion or in an unaffected limb does not influence this automatic bladder activity. When automatic micturition has been established, evacuation of urine is governed by the response to tension of the bladder wall, the relaxation of the tonic sphincter and by the effect of extravesical reflexes.

As a practical deduction, the authors advise that in irrigation of an "automatic" bladder it is most important to avoid undue tension. When it is to be washed out, the volume of fluid at which evacuation occurs should be determined, and the viscus should always be allowed to empty itself, as far as possible, in response to endovesical stimuli.

In Chapter II a description of the phenomena of excessive sweating in gross lesions of the spinal cord is given, and, in accordance with the ideas of Langley and Anderson and of Elliott, the sweating is explained as due to the activity of the involuntary nervous system in the thoracico-lumbar outflow —*below* the level of the lesion.

The extent of area of the sweating differs according to the situation of the cord injury. When the lesion is in the lower cervical region, the head, neck, arms and abdomen may sweat profusely; a lesion of the third thoracic segment may cause perspiration over both arms and the trunk below the second rib; when the injury was at the sixth thoracic level, there was some moisture of the palms of the hands but the hyperidrosis extended from the fifth rib downward; when the ninth thoracic segment was affected, the excessive sweating corresponded almost exactly with the analgesia. In favorable cases, scratching the soles of the feet or any part below the level of the lesion, or distention of the bladder or lower bowel with fluid, often caused very profuse sweating over definite localized areas. If a change in body temperature is due to some general febrile cause, the sweating becomes general.

Chapter III deals with the reflex activity of the spinal cord below the level of the lesion. Under certain conditions the cord below the lesion shows signs of diffuse reflex activity as when scratching the sole of the foot causes flexor spasm, excessive sweating and premature evacuation of the bladder. When these "mass reflexes" are present, the reflexes have, to a great extent, lost their local significance. The "extensor thrust," so-called by Sherrington, cannot be obtained when the spinal cord is completely severed anatomically or even functionally. These extensor reflexes are associated with the maintenance of postural tone and the mechanism on which they depend consists of intraspinal (proprio-spinal) arcs. The control of these movements is situated somewhere in the midbrain and pons and is responsible in man for the appearance of primary extensor manifestations after injury to the spinal cord. Flexor responses, on the other hand, are protective in nature, are the oldest in the phylogenetic scale and belong to the ancient nociceptive mechanism. Their reflex mechanisms reside in the more lowly centers in the nervous system.

The authors believe that so long as local reflex signature is not destroyed and so long as primary postural reflexes can be obtained, the lower end of the spinal cord has not been liberated from control of the parts above the lesion and the overflow of reflex energy into visceral channels will be inhibited.

[The clinical investigations and ingenious methods by which the observations were made, cannot be described here. A careful study of the paper will repay the reader who desires to understand the physiologic principles which underlie the phenomena of automatic bladder activity and other reflex conditions in gross injuries of the spinal cord. And he will find some highly suggestive ideas on the influence of the involuntary nervous system on certain reflex phenomena in the distal end of a severed spinal cord. While the views expressed correspond to the teachings of the Cambridge school of physiologists and to those of Sherrington and Hughlings Jackson, they are at great variance with the ideas of the French—of Babinski and of Marie. The views of Head and Riddoch appeal very strongly to the reviewer.]

ELSBERG, New York.

NEUROSES AMONG RETURNED SOLDIERS, TYPES AND INDICATIONS. CAPT. CLARENCE B. FARRAR, C. A. M. C., Ottawa, Psychiatrist to the Military Hospitals Commission of Canada. Boston M. & S. J. **179**:583 (Nov. 7), 1918.

The paper reviews the first few thousand cases of neuroses returned to Canada from France. Among the types of functional disturbances he discusses in particular the neurasthenic states. The neurasthenic presents features of real nervous exhaustion, and affects all classes. This is contrasted with the development of spectacular symptoms of hysterical nature seen in the younger soldier and among those who have been at the front a shorter time. The cases of neurasthenia show a decided tendency to habit fixation and are more difficult of cure. Pre-enlistment causes were found in 30 per cent. of the cases with epilepsy making up 83 per cent. of that number and psychoses 51 per cent. In the classification of the nervous and mental cases returned, the neuroses made up about 50 per cent. of the total; and of all cases returned 12 per cent. were neuropsychiatric.

In dealing with the functional disorders it is found that there are certain stereotyped symptoms common to all. There is a feeling of general weakness, disturbed sleep, headache and other pain reactions, dizziness or faintness, tremors, psychomotor irritability, complaint of dyspnea and palpitation on exertion, vasomotor disturbances, difficulty in fixing attention and of sustained effort of any kind. Of all the symptoms in neuroses the last to disappear as the patient improves are those of purely subjective character.

Of the epileptics many were found to have developed since entry into service, many were admitted in spite of careful examinations at the recruiting stations, and many who returned diagnosed as epileptics were really something else, usually neurotics.

The general characteristics of the neuroses illustrate a preponderance of exogenic factors in causation; a distinctive war coloring; a wide prevalence of neurotic reactions at least in mild or transitory character in soldiers at the front though not necessarily disabling; phases of trench neuroses masking for a time or modifying the course of actual mental disease; association of neuroses with minor physical disabilities; an attitude of hospitality on the part of the patient to his disability which amounts to satisfaction; fixation of symptoms resulting from fixations of underlying motives.

Prophylaxis should be followed out along the following lines: Elimination from the ranks at the very beginning of those apt to break down; institution of proper suggestion among the men showing them the real nature of neuroses since a certain amount of advance knowledge of this kind skilfully disseminated among the ranks and backed up by a wholesome rigidness both in treatment and discipline will go far toward reducing the frequency and persistence of war neuroses.

The paper shows nothing unusual except the low percentage of cases in which predisposing factors are found; this does not accord with recent investigations, and many writers have gone so far as to state that in nearly every case neuropathic predispositions are evident. Laudenheimer states that 90 per cent. of the patients were predisposed before joining the army; Forsythe says 100 per cent.; Mott says 60 per cent.; while Eder coincides with Farrar in 30 per cent.

PATTEN, Philadelphia.

AN ESTIMATION OF THE PROPORTIONS OF GRAY AND WHITE MATTER IN THE HUMAN BRAIN, MADE THROUGH THE PLANE OF THE OPTIC CHIASM BY MEANS OF THE PLANIMETER. A. E. TAFT, M.D., J. Nerv. & Ment. Dis., **47**: No. 3, p. 161.

Dr. Taft reports the results of planimetric measurements on one frontal section from each of 157 brains. These are divided into the following groups:

	Cases		Cases
No psychosis	9	Manic-depressive insanity	19
Infants and microcephalics	6	Dementia praecox	20
Feebleminded	18	Senile dementia	12
Epileptic	10	Hemiplegics	5
Criminal (judicial homicides)	7	Unclassified	1

The method adopted was the determination by means of the planimeter of the proportion between the area of white and the area of gray matter exposed in a single frontal plane as represented in a photograph of the section or in a myelin sheath preparation of a total brain section. It must be acknowledged that a review based on a measurement of a single section of a brain can be considered as scarcely more than a survey and yet the results lend themselves to some interesting conclusions. Autogenetic relations, as the author points out, would lead to the expectation that in the infants' brains and those of certain classes of failure of normal growth—namely, the microcephalics—that the gray matter which precedes the white in its development would be in greater proportion, and this is bourne out by the preponderance of gray over white as 55 is to 44. The only other group to approximate this ratio is that of the hemiplegics. This series of five cases is not reviewed in detail, but from the illustrations of three of them and the meagre description they are apparently congenital hemiplegias associated with marked underdevelopment or destructive atrophy of one hemisphere.

The control group of cases of malignant disease without psychoses showed a proportion of 47 for the gray matter to 53 for the white. The manic-depressive group were nearly identical with the normal 46 to 54. The dementia praecox series showed a relative lowering of the gray value—43 to 57—which the author regards as an index to cortical atrophy, and in support of this the proportion of gray in the senile dements where cortical atrophy is to be expected is still lower—as 41 is to 59.

It is generally accepted that a general reduction in brain volume is to be anticipated in the senile period whether or not a frank psychosis is in evidence—a simple senile atrophy comparable to that which affects the other organs of the body. This reduction may, as Donaldson has pointed out, arise through loss in volume of the myelin sheaths and does not necessarily presuppose destruction of functional elements. Of the nineteen cases included in the manic-depressive group, ten are within the senile period—the ages range from 63 to 84—and with one exception within the age limits of the cases forming the senile dementia group—from 64 to 83. A further examination of the data shows that the average ratio of gray to white in these ten cyclothymics of advanced age is, excluding decimals, the same as the ratio of the nine cases under 60 years of age. This offers the suggestion that any atrophy which may have occurred as an involution change in these cases has been of a generalized nature affecting gray and white equally and not a selective cortical process such as that postulated for the presbyophrenics.

On the whole, although conclusions drawn from one section of each brain are hazardous, the results are of interest and suggest that the method may prove of value in determining (1) the relative stage of normal development reached in structurally subnormal brains, and (2) in differentiating between the generalized atrophy of senescence and the more selective cortical or medullary destructions of the same period.

ORTON, Philadelphia.

SUBCONSCIOUS IN ITS RELATION TO THE CONSCIOUS, PRECONSCIOUS AND UNCONSCIOUS. L. E. EMERSON, M.D., Psychoanal. Rev. January, 1919.

In an effort to gain a sharper definition of the concept of the unconscious, a delimitation is suggested by which the subconscious is defined as that part of the unconscious which, once conscious, is capable of being trained, is educable. It is an attempt to reconcile the strictly Freudian concept of a non-educable unconscious, which often offers a nihilistic outlook to therapeutic endeavor, with the frequently observed presentations of dream content in which are defined undoubted evidences of progression, or educability. There is a wider intention, of course, defined in this article toward meeting the facts, with an admittedly different hypothesis.

PARKER, New York.

NEUROSES AND PSYCHOSES OF WAR. WILLIAM ALDREN TURNER, C.B., M.D., Temporary Colonel, A. N. S., and Consulting Neurologist. Lancet **2**:613 (Nov.), 1918.

This paper discusses the types of reactions as seen under the voluntary system of recruitment in the early days of the war, and the later type as seen under compulsory service. Earlier, "neurasthenic symptoms were not uncommon in association with conflicts in the minds of conscientious men, who were torn between duty to their country and their personal feelings, opinions, and habits." The compulsory service has brought many men into it who were constitutionally unfitted for the work, and due to lack of adaptation have broken down nervously or mentally. The neurasthenic reactions to camp life are identical with those of civil life, military discipline being the potent factor. A certain proportion pass through the period of training without difficulty, and later break down under the hardship of combat service; these are constitutional neurasthenics and about 10 per cent. give a history of previous mental breakdowns. In actual warfare the emotional causes are very

prominent. Confusional psychoses are commonest and often superimposed on a basis of feeblemindedness; in others, it is the result of physical or psychical trauma. The prognosis in these conditions is relatively good, excluding the confusional states that are the forerunners of dementia praecox and not of long duration. Of the psychotic cases admitted to Lord Derby Hospital, the following classification was made: Manic-depressive, 28 per cent.; mental deficiency, 19 per cent.; delusional insanity, 19 per cent., and dementia praecox, 8 per cent.

The author dwells on the stupors, deliria, and amnesias, stating that the two commonest types of these are torpor and visionary delirium. The stupors are distinctive, there is absolute loss of consciousness in the more severe cases, some catatonic symptoms, deep reflexes normal or exaggerated, pupil reflex impaired or lost, plantar reflexes may be lost, retention of urine at times, but the swallowing reflex is usually maintained. Other cases show a milder grade of stupor and appear as in a daze or dream state, and are found to begin coincident with some psychical shock. The duration of the stupor is often variable and on awakening the patient frequently shows symptoms of functional disorder, as deafness, mutism, tremors, headaches, battle dreams, vertigo, lack of concentration and fatigue. The patient apparently is amnesic for the period of the stupor and sometimes for the antecedent period. The same condition may be found in a pure concussion case, but here the amnesia is more profound, and is of both anterograde and retrograde type. The majority of the cases of stupor are psychoneurotics, and the patient designates his condition as a "loss of consciousness" or "loss of memory."

The clinical types of the war neuroses are: (1) those showing the fear reaction in dilated pupils, staring eyes, tachycardia, sweating, or the type showing rhythmical tremors; (2) those showing features of fatigue and nervous exhaustion, with weariness, jumpiness, irritability, difficulty in concentration, frightful dreams and disturbed sleep, palpitation, giddiness, sense of oppression and anxiety; (3) those showing the symptoms of an anxiety neurosis, loss of sleep and appetite, worry over their duties, lack of confidence, shakiness, emotionalism, disturbed sleep (nightmares), headache, mental depression, fears as to sanity, the climax being produced by some commotional shock, and (4) those showing speech defects, mutism, deaf-mutism, aphonia, stuttering, tremors, tic-like movements, gait disturbances, "bent backs," and other types of hysterical manifestation. These cases are usually admitted in a state of stupor following a shell explosion or burial.

The organic conditions are differentiated from the functional by careful neurologic examination, although in cases of stupor and delirium this may be difficult for a few days. Too much stress has been laid on the physical causes of these conditions and not enough on the psychic. The school of modern psychopathologists maintain that the causes of the psychoneuroses are the failures in adjustment to the unusual conditions, while the French neurologists lay emphasis on "cerebral commotion."

The effect of concussion according to the French neurologist may be direct or indirect. In the former the findings indicate disturbance in the central nervous system by the blood stained spinal fluid, increased pressure, albumin content and a lymphocytosis, in addition to the symptoms of shock, namely, muscle relaxation, hypotonia, impairment or abolition of deep reflexes, extensor plantar reflex, inequality of pupils, impairment of light reflex, retinal hemorrhages and voltaic vertigo. There is an initial period of unconsciousness, followed by a "twilight state." The symptoms of physical trauma may disappear

within a few days and there may then follow a train of psychoneurotic symptoms, apart from the concussion phenomena, or recovery may shortly take place.

The part played by minor direct physical conditions through suggestion is considerable. Farrar states: "The injury of nervous tissue is not necessarily the cause of any possible manifestation which may follow, but it may serve as the starting point of certain trains of association which need never be fully in the consciousness of the patient, but which nevertheless eventuate in the developed fixed neuroses, with all its psychical neurological and somatic phenomena." The chronic symptoms of the traumatic neurosis are persistent and severe headache, photophobia, hyperesthesia to sounds, vertigo associated with labyrinthine hyperesthesia, insomnia and battle dreams, with, on the psychologic side, loss of, or perversion of memory, irritability, loss of self confidence, defective concentration, slowness of thought, over emotivity, terror dreams, anxiety and depression. There is a close resemblance in these symptoms to those of the anxiety neuroses. The course of the traumatic neurosis is usually protracted, and the liability of relapse under similar conditions is much greater. The symptoms are often exaggerated—consciously, perhaps, or unconsciously.

The prodromas of the neuroses are shown, by an analysis of the mental conflicts of the soldier, to be fear, anxiety, a desire to carry on, loyalty to his fellow men, the instinct of self-preservation, which are active over a longer or shorter period of time and brought to a climax by explosion of shells in his vicinity, physical trauma, or some disgusting sight. In these individuals the reaction to discipline and training are not normal. It is stated that the wounded though exposed to the same condition do not develop a neurosis, since they no longer have a motive—their mental conflicts having been relieved by their transfer to the rear; they are disabled and no longer able to participate in dangerous activities. The acute symptoms of the neurosis appear as the patient recovers from his confusion or stupor, and he claims he does not recall the onset, but careful questioning reveals the fact that there was an interval of some duration between the time of the explosion and the loss of consciousness. Sometimes the symptoms of the neurosis do not develop until a considerable interval has elapsed; these patients usually show a confusion during which they do many unaccountable things for which they have no apparent memory. Brown states that this amnesia is merely a splitting of the personality, and that the knowledge of the events following the explosion may be elicited or "brought up" by means of a mild hypnosis. Meyers states that this is a dissociation from inhibition, and that the mutism which developed as the patient emerges from the stupor is a relic of the stupor, and the last of all the symptoms to disappear. The author discusses various hysterical manifestations, laying emphasis on the frequency of astasia-abasia and noting that it may be accompanied by tremor or anxiety, the patient being obsessed by a fear that he cannot walk. The disorder becomes a fixed habit if not treated early, as usually happens in most functional cases. Anxiety and depression symptoms may appear separately, combined, or in association with other disturbances such as terror dreams, tremors and physical reaction. The progress in these cases is estimated by the dream frequency. Fear and dread underlie the symptoms of depression but the depression is not continuous or negativistic as in melancholia. Rest, absolute quiet, sleep, and psycho-therapy are indicated for the relief of these conditions. Of the hysterical manifestations as mutism, astasia-abasia, aphonia, paralysis and contractures, the men are more commonly affected than the officers, but at times a mixture of these and depression or anxiety are found. The officer manifests the anxiety state

in his fears for his adequacy and competence while the private is antagonistic to fighting and wishes only for relief. In discussion of the etiology Dejerine holds to the view that the neuroses are the results of emotional reaction rather than of suggestion as viewed by Babinski. Hysterias are less frequently seen on the line than when the patient has reached the rear and is comfortably situated in some hospital. Trauma acts through autosuggestion and emotion, and contractures may follow slight wounds, or pain from any physical cause may suggest a paralysis or contracture to the invalid and, as in most cases, the war hysteria becomes a defense mechanism.

In the treatment, psychotherapy consisting of suggestion, persuasion and reeducation is effective. Mechanical appliances are worse than useless as they tend to fix the functional disorder. Segregation of the patients in a special hospital is of great benefit as functional disorders are less apt to be copied by the patient than the various suggestions offered by those suffering from physical disabilities. An atmosphere of cure must be the prevailing note and the establishment of early treatment is absolutely essential rendering the task less difficult and diminishing the possibility of fixing of symptoms. In convalescence reeducation and occupation are of great value.

PATTEN, Philadelphia.

THE TREATMENT OF HYSTERIA. JULIAN WOLFSOHN, J. A. M. A. **71**:2057 (Dec. 21), 1918.

This article is based on the work done by the author in British and American hospitals and is a summary of his conclusions in the treatment of 573 cases. Of these cases he cured 95 per cent. completely and 90 per cent. within twenty-four hours. He discredits the use of hypnotism, psychanalysis and general anesthesia, believing, in the presence of the existing emergency, that suggestion, persuasion and reeducation accomplish the desired results as speedily and surely. He describes his method of treatment in the individual case, the cure of the manifest symptoms, and gives a general guide for the physician in handling this type of case. He points out the need of a careful initial study of the case from the view point of history and psychologic make-up of the individual, and the arrival at a correct diagnosis before attempting treatment. There must be established a quiet, firm, confident atmosphere of cure, and the early inculcation of the principle that the physician is master of the situation. Treatment must begin early, thus depriving the patient of an opportunity to fix his symptoms or acquire new ones through contact with other patients and suggestion. The more severely afflicted cases do better when isolated. The patient should be approached according to his intellectual level, the more intelligent being more amenable to direct persuasion, and suggestion, coupled with an explanation of his disease, whereas the less intelligent sometimes need a convincing argument in the manner of the electric appliances and mechanical suggestion (prolonged use of any mechanical appliance is contraindicated since it tends more to the fixation of the symptoms). Whenever the patient shows the least improvement or progress, this should be made the basis for an appeal to greater effort and encouragement. The maintenance of strict military discipline together with the evidence of strong will power of the physician is essential. Treatment should be carried out in a room that is free from disturbance or distractions of any sort. New suggestions should be avoided and segregation of these patients from organic cases or other types of disease is necessary. The disease should be made an unprofitable one for the patient and his fears should be allayed as to there being any permanent or organic disablement in his

condition. The physician must needs have patience and never give up on a case until its cure is completely establisehd. The writer concludes by stating that "the most potent causes of failure to cure are ill will of the patient, unfavorable surroundings, and mistakes in diagnosis." A certain amount of follow-up is necessary in each case and occupation is beneficial during the convalescence.

The author's presentation of the outlines for treatment is clear and concise, but it is not believed that much can be done in the way of careful psychologic study of the case when it is so promptly disposed of after admission. It is true that the manifest symptoms can be removed, but the underlying mechanisms only yield to prolonged and careful investigation and treatment.

PATTEN, Philadelphia.

THE EFFORT SYNDROME. ALFRED E. COHN, M.D. (New York), Major, M. C., Senior Consultant in General Medicine, A. E. F., France. J. A. M. A. **71**:2132 (Dec. 28), 1918.

The writer opens the paper with a brief consideration of murmurs. The war has not altered the significance attached to diastolic murmurs, either of aortic insufficiency or of mitral stenosis, and persons affected with these two disorders have been uniformly rejected from the service. Opinion has altered as to the significance of other important indications of organic heart disease, notably, as to the determination of important and unimportant systolic murmurs. Experience has shown that certain attendant symptoms are most valuable in this determination, namely, those relating (1) to the size of the heart; (2) to the history of infection, especially rheumatic; (3) to the intensity of the second sound in the second left interspace or third left costochondral junction, and (4) to the reaction to exertion. While not exclusively reliable in determining a diagnosis, when a systolic murmur is present, these criteria are of practical value in case a slight enlargement and history of recent rheumatic attacks are also present.

Of greater importance is the effort syndrome, functional in nature. This is the disorder formerly known as the "irritable heart of the soldier," recognized during the Civil War. The principal symptoms are breathlessness, giddiness, sense of fatigue, pain in the chest, often precordial, palpitation, anxious facies, shakiness of fingers, of extremities, sometimes of the whole trunk, cyanosis, sweating, skin hyperesthesia and hypesthesia, and tachycardia. Complaint and report on sick call may be on the ground of one symptom only. According to Hume, pain in the chest is the dominating subjective complaint in 768 cases out of 1,000, breathlessness in 675, giddiness in 403, palpitation in 354, precordial tenderness in 268, fainting with loss of consciousness in 98, and fainting without loss of consciousness in 25. In addition to the soldier's complaint he is likely to look worried and present tremors or shakings. Questioning will elicit the fact of suffering from headache, bad dreams, furtive pains, and increasing disability to work. When pain is in the chest, it is usually sharp, sticking and fleeting, seldom constricting. Effort tends to bring it on. Associated with the pain, areas of skin hyperesthesia are found in from a quarter to one-half the cases, varying in intensity. Breathlessness, manifested in some reported cases by frequencies of from 60 to 80 a minute, resulting from effort, and returning to normal after rest and prostration on the ground, is common. Propping up, as in the case of heart disease, is not necessary for relief. Cough and spitting are not prominent. Fatigue may alone be sufficient to incapacitate the soldier, a walk of 100 yards or the

carrying of light equipment being beyond his ability. Muscular tone may be low. Occasional attacks of fainting occur. Cardiac palpitation, sometimes persisting through rest, is a common symptom. Tremors are coarse and shaky, and often overshadow the picture. Although the affection does not involve a disordered action of the heart (D. A. H.), irregularities will be found, as they will in any large group in a community, but they are not a factor in the effort syndrome.

Racial predisposition as a factor in etiology has been disproven. Investigation has not shown that it is dependent on any specific infecting organism. Of more importance is the possibility of disturbance of thyroid secretion. Many symptoms are shared in common by exophthalmic goiter and the effort syndrome. But in the effort syndrome exophthalmos is usually absent. In the effort syndrome dyspnea and increase of the size of the heart do not attend tachycardia, as is the case with exophthalmic goiter. Then too, the tachycardia and dyspnea of exophthalmic goiter persist as a rule, while in the effort syndrome they disappear. Many effort syndrome cases have not arisen de novo as a result of the war. The stimulus of military exertion has driven latent defects into consciousness. There is a group which have reacted to the stimuli of war by manifestations partly cardiovascular, partly psychoneurotic. It is most interesting that the author finds "the most difficult part of the subject to discuss is its relation to the war psychoneurosis."

The variety of origin of the cases of effort syndrome forbids rigid generalization as to their treatment. As a rule they should not be collected into hospitals. Medicomilitary supervision in camps, with discipline and occupation, is preferable. Physical exercise in drill, farm work, and games is advisable. Attention to the neuropathic elements of their condition should not be overloked in the therapeutic plan.

REYE, Detroit.

NERVE ENDINGS OF SENSORY TYPE IN THE MUSCULAR COAT OF THE STOMACH AND INTESTINES. PRELIMINARY NOTE.

F. W. CARPENTER, J. Comp. Neurol. **29**: No. 5, p. 553.

Carpenter calls attention to the fact that while the literature gives many references to the motor nerve endings in the wall of the alimentary tract and other smooth muscle organs, only one reference is made to nerve endings of a sensory type—that by Ploschko in the wall of the trachea. The work of the physiologists and clinicians indicates that sensory impressions arising in the alimentary tract all have their origin in distention or contraction. There is no evidence of tactile or other special sensitivity in the mucosa and the accepted opinion is that the muscular coats form the site of origin of the afferent stimuli to the myenteric plexuses.

Carpenter reports the finding in the stomach of the cat and the intestine of the dog of fine terminal skeins, nets and tufts which conform to the sensory rather than the motor nerve termini. The examinations were made in material prepared by the *intra vitam* methylene blue method. The skeins and nets are recorded in the stomach of the cat and are found in greatest number in the longitudinal muscle bundles. A few were seen in the subperitoneal connective tissue and an occasional one in the deeper layers of the muscle, but none in the submucosa or mucosa. They terminate fine varicose nonmedullated nerve fibers whose course has not been traced. The terminal tufts in the dog's intestine are similarly placed in the longitudinal muscle coat and the fibers from these have been traced to and into the myenteric plexus.

These findings of Carpenter's when confirmed will prove an interesting confirmation of the deductions of the physiologists from their experimental data.

ORTON, Philadelphia.

SHELL SHOCK AMONG TROOPS. MAJOR THOMAS W. SALMON, in the report of recent studies in England. Boston M. & S. J. **178**:133 (Jan. 24), 1918.

Mental and functional nervous diseases constitute one-seventh of disability discharges from the British Army, or one-third, if discharges from wounds are excluded. Sir John Collie, President of the Special Pension Board on Neurasthenics found that the neuroses constituted 20 per cent. of the disabilities in 10,000 consecutive cases. He recommends that the functional nervous disorder be not considered a pensionable disability, until a year's special treatment had been given the individual, both because of the economic consideration and the injustice of discharging men whose disabilities developed while in service.

In the light of recent studies and facts in therapy there seems at present little need for this view as cases are being rapidly cured of their disabilities at the front and in the cases invalided home cures are taking place promptly. The signing of the armistice has been a powerful therapeutic agency, but even before it definite methods of treatment were meeting large successes.

PATTEN, Philadelphia.

Society Transactions

BOSTON SOCIETY OF PSYCHIATRY AND NEUROLOGY

Regular Meeting, Nov. 21, 1918

CHARLES G. DEWEY, M.D., *President*

THE TREATMENT OF NONPARETIC NEUROSYPHILIS BY INTRAVENTRICULAR INJECTION. Presented by DR. KARL A. MENNINGER.

DR. MENNINGER informally discussed the above topic, speaking of the great number of hopeless syphilitic hemiplegics seen in the wards of general hospitals. The value of intraventricular therapy in cases of general paresis had led Dr. A. L. Skoog and the speaker to undertake similar therapy in the nonparetic forms of neurosyphilis. Two cases with favorable outcome were cited, and the statistical evidences of improvement given. The conclusions pointed preeminently to a justification for further study of this form of treatment of non-paretic neurosyphilis.

DISCUSSION

DR. P. C. KNAPP believed that the intraventricular method should be more used and with greater prospects of success in the forms of neurosyphilis mentioned than in cases of general paresis. He said that he had not seen a single case of general paresis treated by intraventricular methods which had not been somewhat benefited. And yet, the most brilliant results can be expected in the meningeal and vascular types. He had noticed the features of meningeal irritation described by the speaker, but had not investigated the fluid by another lumbar puncture. Dr. Knapp mentioned a neurosyphilitic hemiplegic who showed very marked improvement after only a few intraventricular treatments. He thought there was less headache after the intraventricular method than after the intraspinal.

DR. F. J. FARNELL asked if the patients who had responded so well to the intraventricular treatment received any previous treatment by intravenous or other methods. He also asked if the speaker had any explanation to offer regarding the reaction of turbidity not infrequently met in the form of treatment used by the reader. It was not infrequent to see marked improvement in hemiplegias due to syphilis by the more usual methods of treatment, making it unnecessary to resort to the more radical procedures.

DIAGNOSTIC PROBLEMS IN PSYCHIATRY. Presented by DR. LAWSON G. LOWREY.

DR. LOWREY emphasized the importance of a complete analysis of the entire patient before a diagnosis should be rendered. Incomplete analysis is a most common cause of error in diagnosis in psychiatric conditions. The tendency of the beginner is to overinterpret and underobserve. Diagnostic synthesis can be made by experienced men if the facts of observation have been accurately set down.

The object of the present communication was to report some statistics on the problem of diagnostic accuracy. Two types of study had been carried out. The first related to the accuracy of so-called snap diagnoses, and the second to the accuracy of the hospital diagnoses as measured by the diagnoses later established in the state hospitals to which the patients had been committed.

In 300 consecutive admissions to the Psychopathic Hospital, a diagnosis of the mental picture was made by the admitting physician, usually a younger member of the staff, and a diagnosis was recorded by the chief medical officer on the visit next morning. These opinions were then checked by the diagnoses made on the fifth day or at staff meeting later. By this measurement, 64 per cent. of the cases were correctly diagnosed by the admitting physician and chief medical officer on the first impressions. In 13 per cent. of the cases in addition, the chief medical officer made the diagnosis later determined by the staff as correct. In an additional 4 per cent. of the admissions, the admitting physician made the correct diagnosis, not agreed with by the chief medical officer. It can be said, therefore, that in 81 per cent. of the cases, a correct diagnosis was made within twenty-four hours of admission to the hospital. In 11 per cent. of the cases, there was disagreement in all three diagnoses, and in 7 per cent. of the cases the diagnoses of the admitting physician and the chief medical officer agreed, but were later found to be wrong.

In every group except epilepsy, the conditions were at first overdiagnosed. The least accuracy was found to be in the manic-depressive group of cases. By groups, the correct snap diagnoses were made in the following: Dementia praecox, 86 per cent.; general paresis, 83 per cent.; manic-depressive, 67 per cent.; feeblemindedness, 91 per cent.; epilepsy, 100 per cent.; alcoholic psychosis, 82 per cent.; undiagnosed or unclassed agreed in 37 per cent. It is obvious then, that a brief and accurate analysis of the cases allows a correct diagnosis to be made in from 60 to 80 per cent. of the cases.

At the Psychopathic Hospital, where the patients are seldom seen for longer than a month, the diagnosis must be made on the symptom analysis and the history. The diagnoses of 419 cases as established in the state hospitals after observation were compared with those made at the Psychopathic Hospital after the short period of observation. In 23 per cent. of the cases, the state institutions changed the diagnosis made at the Psychopathic Hospital. Using the state hospital diagnoses as criteria of accuracy, the Psychopathic Hospital diagnoses were found to be correct as indicated (by disease groups): Dementia praecox, 85 per cent.; manic-depressive, 70 per cent.; neurosyphilis, 92 per cent.; acute alcoholic, 67 per cent.; chronic alcoholic, 70 per cent.; senile dementia, 78 per cent.; epilepsy, 100 per cent.; arteriosclerotic, 55 per cent.; Korsakow's, 64 per cent.

The question of the error in psychiatric diagnosis at large and in general diagnosis was raised. The only way to settle the question is for each hospital to collect careful statistics of its own patients and of the ultimate condition to which their disease progresses. The value of staff conferences and reconsideration of all cases within a year of their admission to the hospitals would greatly help in the problem of securing definite information in the matter of diagnostic accuracy.

The diagnostic difficulties in individual cases were next discussed by the speaker, using case records to illustrate the features calling for emphasis.

The first case quoted was that of a Jewish girl, aged 25, who, a month before, had been delivered of a normal baby. After delivery, she became restless, sleepless, fearful, and later depressed and deluded. When examined at

the Psychopathic Hospital, she had visual and auditory hallucinations, was deluded and apathetic, mute and resistive. She was finally discharged against advice and returned to the hospital in about three months, this time being talkative, obscene, excited and showed typical maniacal features, with good insight. She recovered from this attack and since has had another, the third being also of a typical maniacal character. The first attack looked like praecox, but the rôle of the delivery and the possibility of endogenous toxemia must be considered.

Another group in which error is easy is in those cases showing a praecox syndrome and in which, in addition, there seems to be a definite psychogenic factor, leading one to consider strongly the diagnosis of hysteria. The case to illustrate this was a woman, aged 44, who became much disturbed over a murder in her place of employment, her particular interest in the case arising from the great resemblance of the man accused of the crime to her dead brother. One day she was found much excited and trying to escape from the devil. When examined, she showed paralysis, was hallucinated and deluded, she was manneristic and inaccessible. Careful probing elicited a "spiritual" love affair with the superintendent of one of the state institutions, he having no knowledge of her attitude toward him, with the sexual features predominating. A great emotional complex arose and from it could be reasoned a psychogenic cause for the presenting picture. The possibility of the various paranoid conditions was discussed and the occasional close relationship of these conditions to manic-depressive psychosis was emphasized. A case was cited of a man, aged 45, prominent in his profession, whose presenting features were marked ideas of reference and who later showed typical features of manic-depressive psychosis. The diagnosis in such cases depends on the history and the character of the patient's restlessness and activity.

Another group of cases calling for careful differentiation is that of the neurosyphilitics with psychoses of a type not usually associated with syphilis. Dr. Lowrey quoted a case of a woman with praecox features, a chronic alcoholic and prostitute, who was a drug addict and had neurosyphilis. She was treated for the last named condition, though she never has shown any clinical features indicating neurosyphilis.

It seems obvious from these statistics and case reports that accuracy of diagnosis depends on careful and complete analysis of all the symptoms and a probing for symptoms not at once apparent. Only in this way can errors due to false impressions be ruled out. Another important lesson is the importance of uniform diagnostic standards. Then, even if the idea is wrong, workers in the same field will at least be on common ground. Many psychiatric terms are unnecessarily vague and should be replaced by less indefinite ones. The more accurately observations are made and the more accurately they are recorded, rather than deductions, the sooner will uniform standards be adopted, and a vast amount of clinical material be made available for general study.

DISCUSSION

Dr. P. C. Knapp asked the speaker by what criterion he decided that a given diagnosis was correct or not. He said that in some of the cases, necropsy or laboratory findings might establish the diagnosis, but in many cases these could not become available. Authorities still disagree as to the existence of some of the conditions as diagnosed and many of Kraepelin's ideas are being replaced. So it would be interesting to know how a diagnosis was arrived at.

DR. E. H. COHOON said that he had been fortunate in having had state hospital experience before going to the Psychopathic Hospital and his present associations had led him to appreciate the difficulties of making diagnoses at the Psychopathic Hospital where the patients are seen for such short periods. He felt that the staff at the Psychopathic Hospital were very good indeed to be able to do as well as they do. He asked if the statistics were made up with the alternatives in diagnosis considered.

DR. J. V. MAY thought that it was remarkable that the Psychopathic Hospital diagnoses were correct in such a high percentage of cases. He spoke of the difficulties encountered in the hospital in the way of student help and an ever-changing staff. He asked how the series as presented had been prepared and suggested that it would be of value to collect the end-results and diagnoses on a larger number of cases, possibly including all consecutive admissions for a period of a year.

DR. LOWREY, in closing the discussion, said that when the Psychopathic Hospital sent diagnoses to the state hospitals, only one diagnosis was given—sometimes unclassified—and the alternatives were not used. He mentioned the difficulty of being sure what was or was not the correct diagnosis in any given case, but the standards which had been adopted in collecting the statistics were the most dependable obtainable. He said that the plan of withdrawing cases of neurosyphilis from other mental groupings on the finding of syphilis of the nervous system was not completely followed and that the cases were put in the neurosyphilis group with the added diagnosis of type. He also said that it was evidently true that cases of epilepsy were being missed for it could not be expected that the diagnoses could be correctly made in 100 per cent. of those cases. The possibility of making direct commitments instead of keeping patients for ten days, since the diagnoses could be made in a majority of the cases at once, is not practical because of the danger of missing the diagnosis in individual cases.

BOSTON SOCIETY OF PSYCHIATRY AND NEUROLOGY

Regular Meeting, Dec. 19, 1918

CHARLES G. DEWEY, M.D., *President*

A CASE OF CYSTICERCUS RACEMOSUS (TAENIA SOLIUM) OF THE SPINAL CORD. OPERATION, SURGICAL RECOVERY AND DEATH. Presented by DR. P. C. KNAPP.

The patient had been on the nerve service at the Boston City Hospital and later operated on by Dr. A. R. Kimpton. The case seemed worthy of report because tumors of this character in the spinal cord are distinctly unusual.

History.—The patient was a Russian, aged 25, who, since childhood, had had momentary periods of unconsciousness and dizzy spells, with occasional convulsions in which he bit the tongue. There had been headache and aura. Of late years, he has had three or four attacks a year. A year ago, he had had an attack, without losing consciousness, after which he had a dead sensation of his right arm and leg and marked headache. In the winter of 1916, he had severe pain in both sides of the chest and several attacks of it since. In October, 1917, intermittent pain and dyspnea developed and his legs felt numb. Three weeks before entrance to the hospital, there was severe pain

in the abdomen, high up on the left side. Ataxia and pains in the legs were noted.

Examination.—When examined, the neck was not stiff, the reflexes were exaggerated, there was double clonus and double Babinski, the abdominal and cremasteric reflexes were absent, and there was ataxia and astasia. The Wassermann test was negative; pupils normal. There was hypalgesia and sensory changes below the area of the fourth and fifth dorsal segments, and over the corresponding vertebrae there was distinct tenderness.

Operation.—The patient was operated on March 5; a laminectomy of the fifth dorsal vertebra was done. The spinal fluid was under tension and at the level of the fifth vertebra, an irregular, translucent, cystic mass measuring 5.5 by 1 cm. was discovered. It was enucleated and, at pathologic examination, found to be a cyst containing the *Taenia solium.* The patient did poorly for a time and developed a paraplegia with neurological signs much as previously noted. An extensive decubitus developed together with paralysis of the bladder. He returned home in June, against advice, and died in August.

DISCUSSION

DR. A. R. KIMPTON said that the operation was decidedly difficult. The anemic area which was found in the cord and which looked but little abnormal was distinctly hard and cystic to his touch. Incision of the cord permitted the mass to be popped out without difficulty, when it was found to be a multilocular cyst. Dr. Kimpton showed some photomicrographs of the sections. He said that so far as he knew, his was the only case of its kind in which the tumor was removed during life. Cases have been reported in which the Cysticercus has been found at postmortem examination.

PROTHYMIA: NOTE ON THE MORALE-CONCEPT IN XENOPHON'S CYROPEDIA. Presented by DR. E. E. SOUTHARD.

In a short communication Dr. Southard called attention to the material in Xenophon's Cyropedia as forming material of great value in a historical study of the morale-concept and one which might enliven the ethics of the day. The itemizing of morale-measures in the Cyropedia indicates the probable success of a behavioristic version of a large part of morale as the Greeks saw it.

In particular, the roots of most of the words employed in Xenophon's morale-description are roots having to do with movement and speed (rather than with mere strength) and having little to do with mere feelings. Many of the words indicate the thoracic seat of the emotions engaged rather than a seat in the head or in the muscular system at large. Xenophon's description is more a matter of heart than of brawn or of head, but "heart" gets a behavioristic accounting rather than one in terms of felt emotion.

The morale of Xenophon's account in the Cyropedia is plainly far from the story of morale in the modern sense, especially the morale developments in armies and nations subsequent to the French Revolution.

The term *prothymia* is indicated for the morale situation as depicted by Xenophon and has several advantages. It is a leading term in Xenophon's list. The root word has hints of motion in it, as well as general usage in compounds suggesting "heart" in a figurative sense; the prefix—*pro*—has suitable intimations of pushing forward in space. Modern psychiatry has come to use the term—*thymia*—in many compounds describing variants of emotion,

such as hyperthymia, parathymia, etc. The term prothymia is euphonious and readily suggests variants and readily lends itself to use as an adjective or a substantive.

THE MILITANT. Presented by DR. EDWARD B. LANE.

Dr. Lane gave the paper of the evening on this subject. He said that alienists are quite frequently asked their opinion about such individuals and what can be done with them. These cases present distinct problems and it is not an easy matter to make the diagnosis and advise appropriate treatment. The reader said that several cases had been referred to him and that an efficient remedy was very difficult to find, if it could be found at all. He had ventured to bring the problem before the Society with the desire for an exchange of opinions.

The typical case, usually a woman, presents a history of having been very efficient and capable when young, perhaps difficult to get along with and regarded by her friends and family as temperamental. Often, she has been a business woman or a teacher. If she has married and has children, she has had little difficulty until along about 40 when the children have reached an age of more or less independence, when trouble begins. The children, especially the daughters, find that they are not permitted to do as other children and appeal to the father who may well sympathize with the children. The mother sees her authority questioned and becomes at once disturbed. Being aggressive, she sets out to maintain the authority. Petty faults and nagging tactics are employed until the entire family becomes arrayed against her. Friends desert the children who cannot bring them home because of the attitude of the mother.

Servants are kept with difficulty for they will not endure living in such an atmosphere or remain under the authority of the housewife. Such a woman may well hold social offices and be tolerated for her administrative ability or social charm. But real friends drop away for one reason or another, invitations to social affairs grow fewer, social calls are not returned, ugly rumors about her family relations are heard and friends dislike to be seen in her company. Petty jealousies and frictions arise and the husband and wife become less cordial to each other. The daughter finds life miserable, for she can do nothing without meeting criticism and opposition from her mother, who feels that she has not been fully consulted about the plans and activities of the child. If the daughter has been receiving attention from some worthy young man, the mother can still find nothing good in him and attempts to villify the young man's character and even goes so far in some instances as to raise questions as to the daughter's virtue. Such tactics lead the father and family to more openly defend the daughter, whereupon the mother attacks the others with equally vile or even worse accusations and insinuations. She may even go so far as to spread suspicion among the business associates and friends of the husband.

Soon she is brought to the physician and before him she is a fine actress. She denies that she mistrusts the husband and that she has made any of the statements for which she has been given credit. She maintains that she has made no insinuations about the daughter and her friends and enters into a long and detailed defense of her desire to do the best for her children. There is usually little or no documentary evidence. She challenges the physician to continue the examinations, hinting that after he has found her sane that she would like to have the husband examined for his actions need explain-

ing. Private detectives may be employed by the wife to secure evidence, though usually the wife is unwilling to divulge any evidence. A lawyer may also have been employed in anticipation of future legal difficulties. The daughter continues to have an unhappy time, in part because of the jealousy on the part of the mother.

Finally, the husband has her sent to some institution for observation. There, the physicians probably find nothing of special note and the conduct of the woman has been without comment, there is no depression or elation, no impulsivities or other features signifying mental disease. The picture she paints of herself to the staff is that of the abused, misunderstood and unappreciated wife and mother. Nothing can be done and she is ultimately released, triumphant.

More and worse trouble is in store for the family. She never stops to inquire if she may not be entirely or largely to blame for the entire situation, but instead, her militancy becomes more aggressive. She consults a lawyer and threatens to sue the physician who suggested the possibility of insanity. She makes many more and far reaching accusations against others. The children either run away from home or resort to means of being there as little as possible. If they do run away, the mother is likely to follow them, especially if the daughter leaves, and all manner of complications arise in the new surroundings. The daughter is haunted from place to place and the insinuations of the mother ruin the girl's reputation. The cunningness and brutality of the tricks played by such a mother may be indeed remarkable. The entire business relationships of the husband may be undermined and his bankruptcy brought about by the methods she employs in her attacks on the husband.

These cases, which need not be further elaborated, bear resemblance to the paranoid states in many respects. But it is difficult to establish any insane delusions. Some of the acts suggest the presence of delusions and true delusions may be expected after years of this state of mind. They are not psychasthenics with obsessional fears, for they do not show fear, they are aggressive. They love the sense of power and become excited and belligerent if it is denied them. They are not imbeciles, their judgment is not impaired except in one field. Like paranoiacs, they add to the list of their opponents all who side with their enemies. The brutality and extremes to which some of these people may go reminds one of the crimes of Jesse Pomeroy and the Huns in Belgium. These people are allied to those who have uncontrollable impulses. The feeling of power destroys affection and overcomes judgment. This same motive stimulates their inventiveness and summons all their resourcefulness to gain gratification of their abnormal appetite. They really belong in the group of the litigant and querulent, in that the age incidence is similar and treatment as hopeless. If they live, mental deterioration may be expected. Actual restraint seems the only logical manner of controlling them.

If legislation is needed for such cases, it will first be necessary for psychiatrists to recognize the condition. Laymen acquainted with the persons concerned recognize that the individual is abnormal and should not be considered criminal. These people are not really deluded, it is on this point that alienists have failed to convince the courts. After all, the truest test of mental disorder is the conduct of the individual in question, by which criterion the militant is assuredly insane. These individuals should not be dismissed as conscious evil-doers, and the family and friends of such an individual fully

realize that they are not responsible. Punishment, if resorted to, merely aggravates the militant and makes matters worse. And no end of criticism is heard from those acquainted even remotely with the situation. If commitment as insane is resorted to, such a person is a most uncomfortable individual in an institution and an early attempt to get rid of the patient is made.

These people act insanely, they lack insight and are without repentance. They are not demented and they cannot be forced into the group of paranoiacs. Their lives are not delusions; hallucinations and confusional states cannot be invented for them. They should be recognized by alienists as a type, and then we should not be obliged to look for the more usual symptoms of insanity, such as delusions. Then alienists could go before a court and present the case as one of a patient who acts insanely, who is irresponsible on the ground of an uncontrollable impulse, and ask for commitment on that ground. No further legislation is needed to cover such a case. The reliance in these cases which must be placed on the history was emphasized and attention directed to the need of special care in that feature.

DISCUSSION

Dr. H. B. Howard said that he had seen several cases like the type case which Dr. Lane had discussed and spoke of a man whom he had observed over a period of ten years. During that entire period, he had known of but a single delusional idea being expressed. In this instance, the militancy and jealousy were directed toward the son who was a better business man. The father resorted to all manner of accusations and insinuations against his son and finally undermined the confidence of all the son's business associates, bringing failure to him. There had never been any delusions except a single rather trivial one about being afraid to sleep in a certain room because the angle of the roof was such that it might fall on him.

Dr. E. E. Southard wondered whether Dr. Lane's so-called militant group was intended to be limited as to sex and civil condition. He also wondered whether deterioration was to be regarded as a constant characteristic of such cases, which were perhaps more parabulic than paraphrenic. It was exactly in these cases of parabulia that the judge was hard to convince in the matter of commitability. Was there not possibly a relation between these cases and a sort of mild sadism?

Dr. G. A. Blumer said that, in his experience, the condition was not as rare as might be supposed and that he too thought that most of the patients eventually deteriorate. He spoke of a man whom he had known a long time, a man holding a very responsible position and discharging his obligations without flaw, who had for thirty years been harboring a secret suspicion against his wife. Not until a recent trip to Europe had the fact been known, for then the husband had interviewed the various men on board ship as to the conduct and behavior of his wife. He even insisted on having a medical examination of his wife on her return. The man has since developed definite delusions and is at present confined as insane.

Dr. Lane closed the discussion by saying that not all of the cases which he had known had been among women or the married. An understanding of the unreasonable and entirely incomprehensible actions of some of these people is impossible. When they are sent to institutions, the staff of the hospital hedges and little satisfaction or relief can be given the afflicted person or family. They are a terrible nuisance, though not common. He said that there was no hesitancy in committing cases of kleptomania and pyromania, and he thought that this group should be committable.

CHICAGO NEUROLOGICAL SOCIETY

Regular monthly meeting, held jointly with the West Side Branch of the Chicago Medical Society, Dec. 19, 1918

Clinical Meeting

HERMAN CAMPBELL STEVENS, M.D., *Vice-President, presided*

LESION OF BRACHIAL PLEXUS. Presented by DR. S. KRUMHOLZ.

The patient was a laborer, aged 21. His previous history was negative; no alcoholism or syphilis. On July 1, 1918, he fell from a scaffold 50 feet high. He was unconscious for five hours. On regaining his senses he was found to have a number of contusions and paralysis of the right arm which has persisted. Patient complains of constant pain over the thumb and index finger.

On examination the patient presents complete flaccid paralysis and wasting of the right arm, with the exception of slight motion in the fingers. The scapulae were on an even line; no displacement of the inferior angle, no winged appearance of the back on the affected side, showing that the serratus magnus was not paralyzed. The triceps and biceps reflexes were absent; sensory disturbance present over the entire radial side of the arm, forearm and hand, and radial side of index finger. The cranial nerves were normal; there were no ocular changes, that is, no pseudoptosis, no contraction of the pupil on the affected side, no narrowing of the palpebral fissure, no anophthalmos.

LESION OF BRACHIAL PLEXUS. Presented by DR. S. KRUMHOLZ.

The patient was a laborer, aged 34. Previous history negative. On July 13, 1918, he fell from a racing car, while standing on the running board. He regained consciousness after nine hours and found the left arm paralyzed, which still continues; four weeks after the injury neuralgic pains appeared in the arm.

Examination: No motion in the forearm or wrist; abducts arms not quite to a right angle; shrugs shoulders quite well; arm atrophied; no sign of serratus magnus paralysis; all deep reflexes of left arm are absent; normal in other extremities; anesthesia of the entire arm, except an area extending over the inner border of the upper two thirds of the upper arm; cranial nerves normal; Horner's syndrome absent.

In traumatic, as in other nerve lesions, the chief difficulty rests not in the detection of the lesion, but in the determination of its seat. For the purpose of localizing the lesion the speaker favored Frazier's method, of dividing the plexus into three portions: (1) the intravertebral portion, which contains the separate anterior and posterior roots within the dura; (2) the intervertebral portion, where the roots leave the spinal canal enclosed in a separate sheath of dura and the spinal ganglia lie in the intervertebral foramina; and (3) the extravertebral portion comprising that portion of the nerves from the intervertebral foramina to a point where they unite to form the various nerve trunks. In extravertebral lesions, the symptoms will depend on whether the nerves are injured distal or proximal to the point at which branches are given off to the serratus magnus and rhomboideus, or still lower down to the supraspinatus or infraspinatus muscles.

In these two cases none of these muscles were affected; there was no displacement of the inferior angle of the scapula, and no so-called "winged"

appearance of the back; likewise the ocular symptoms shown by Horner's syndrome were absent. Therefore, we must conclude that we are dealing here with extravertebral lesions of the brachial plexus.

In the treatment of these cases, surgical interference is indicated when there is no diminution of the paralysis at the end of three or four months, and in the opinion of the speaker the operation ought to be performed immediately after the injury, followed by massage, etc. The operation should be an end-to-end anastomosis of the nerve or an autofascial tubulization.

In Case 2, about four weeks after the injury, the patient had intense, intermittent, darting, neuralgic pains, which, according to Frazier, can be relieved by section of the posterior roots.

DISCUSSION

Dr. George W. Hall brought out an inetresting and unusual finding in Case 1, showing that the affected shoulder was higher than the unaffected, although the trapezius was not involved.

Dr. Sidney D. Wilgus asked whether the anesthesia could be explained on the ground that the posterior roots were damaged, the motor disturbance being due to injury of the trunk.

Dr. H. C. Stevens asked whether fibrillary contraction of the muscles was observed during the course of the atrophy.

Dr. H. J. Smith asked what the findings were at operation.

Dr. Krumholz, in closing the discussion, stated that in Case 1 the surgeon's record shows that a lesion was found in the lower part of the brachial plexus, one-half to one inch above the upper border of the clavicle, the distal portion being connected with the proximal cord by fibrous tissue embedded in the scalenus anticus muscle. The distal nerve was located readily, the proximal with difficulty. The cords were not severed, but the connections were left after removal of the scar tissue.

In Case 2, the surgeon's record shows degeneration of the nerve trunk and scar tissue. This scar tissue was removed, which was all that could be done at the time.

It is possible that the posterior roots in Case 2 were torn with an intradural lesion of the fifth and sixth cervical and also a lesion of the trunk. An exploration of the plexus and a laminectomy are advisable. Such an exploration might reveal reparable nerve bands, while the laminectomy would reveal such an injury, and the section of the posterior roots might stop the neuralgic pains.

PROBABLE CEREBELLAR TUMOR. Presented by Dr. George W. Hall.

The patient was a laborer, aged 30, who denied venereal disease. He complained of dizziness, disturbed vision, marked weakness of the lower extremities and disturbance in speech, which symptoms appeared in August, 1918. At about 5 p. m., when coming home from work, he had noticed impairment of vision which lasted for a few moments. Half an hour later there was a similar attack, and vision had been impaired constantly since that time. Two weeks prior to this he had complained of severe headache but could not remember the exact location. The headache was accompanied by dizziness, and this had been persistent since the impairment of vision. On account of weakness and dizziness he could not walk and was so weak he could not hold a spoon.

Examination revealed marked bilateral coarse nystagmus, more marked toward the right. Vision, right eye, 6/200; left, 5/200. The disks were slightly

pale; no evidence of choked disk. There was also slight disturbance in speech; syllables were not sounded very well. The reflexes were very brisk in both upper and lower extremities. No sensory disturbance, no Babinski, no ankle clonus. He could touch the nose with the left forefinger fairly well, but there was some evidence of ataxia in the right upper extremity. Ataxia of the lower extremities was more pronounced—right was worse than left. There was no disturbance of the muscle-sense as found in ataxia of spinal origin. No bladder disorder. He complained of external objects going to the left; although his body did not appear to deviate.

These findings, together with the reeling gait, made possible a diagnosis of a lesion in the cerebellum perhaps extending a little more to the right than to the left of the vermis. He had a tendency to fall backward rather than sideways so the lesion was probably in the vermis of the cerebellum rather than in the left lobe. In wrist movements there was better power over the left than over the right. The sudden onset was difficult to explain, but possibly a growth of a gliomatous nature could give this sudden onset on account of a hemorrhage around the growth. Such patients often have slight attacks of paralysis which clear up, and subsequent necropsy shows evidence of hemorrhage. The chief point which spoke against its being a tumor of the cerebellum was the absence of choked disk, but this sometimes occurred. The Wassermann reaction was negative both on the blood and spinal fluid. The fluid showed from 15 to 20 cells with a slight Ross-Jones reaction. The intraspinal pressure was normal. No Abderhalden test had been made. Gordon and Oppenheim reflexes were absent.

Dr. Peter Bassoe asked if it was possible that the poor vision and pale disks might be due to secondary atrophy, and whether the outlines were perfectly clear? It might mean that he had had an optic neuritis, not very severe, and that suggested that there might have been a time when pressure was much higher than now. They might be dealing with a tumor of the fourth ventricle rather than of the cerebellum proper. Many such tumors gave cerebellar symptoms. It was characteristic of these growths that they may cause sudden pressure symptoms; a sudden hydrocephalus might account for the sudden onset. Such a tumor might exist for a long time without symptoms. Another thing in favor of this diagnosis was the increase of cells and globulin, which is commonly observed in ventricular tumors and more frequent than in pure cerebellar tumors. If it was a ventricle tumor one might expect increase of headache and dizziness in changing the position of the head. This was sometimes true of cerebellar tumors, but was more constant with ventricular growths.

Dr. Hall replied that the Bárány test showed nystagmus lasting about twenty-two seconds on each side. The chief things which attracted him were the unilateral character of the symptoms, more marked on the right than on the left. Another thing which was quite characteristic of cerebellar lesions was the ataxia which was so much more marked in the lower than in the upper extremities.

TRANSVERSE MYELITIS SHOWING BEEVOR'S SIGN. Presented by Dr. George W. Hall.

This patient was a man who had a syphilitic transverse myelitis in the twelfth dorsal region showing a beautiful Beevor sign. (Demonstrated marked movement of the umbilicus upward by having patient raise his head from the pillow.)

PROGRESSIVE MUSCULAR ATROPHY. Presented by Dr. George W. Hall.

The patient was a teamster. There was no history of syphilitic infection. Marked fibrillary twitchings were present in the muscles of the back and upper extremities; no sensory disturbances. The onset was gradual, beginning in the right arm and then extending into the left arm. There was marked weakness as well as atrophy of the muscles of the shoulder group and atrophy of the muscles of both hands, a little more marked in the right. There was no Babinski reflex, and no stiffness or spasticity of any kind in the lower extremities.

With the gradual onset in one arm gradually extending to the other a diagnosis of progressive central muscular atrophy had been made.

AMYOTROPHIC LATERAL SCLEROSIS. Presented by Dr. George W. Hall.

This patient was a man with marked spasticity. There was no history of syphilis. There was marked atrophy of the muscles and fibrillary twitchings in the upper extremities. The upper extremities were much the same as in Case 3, but the marked spasticity in the lower extremities showed involvement of the lateral column of the cord in addition to the anterior cells. The symptoms had existed for one and one-half years and the two cases could be classified as the same disease. Amyotrophic lateral sclerosis and progressive muscular atrophy were different types of the same disease, and if one of the cases was possibly a multiple sclerosis it was certainly of the amyotrophic type. The Babinski sign was very pronounced, but the spasticity was so great it was difficult to demonstrate it. Oppenheim's sign was not present and there were no sensory disturbances.

SYRINGOMYELIA. Presented by Dr. George W. Hall.

The patient was a man who presented atrophy of the tongue which was seen much better when the tongue was held back in the mouth. Fibrillary twitchings were present and marked on the right side only. The patient also showed evidences of sensory disturbance, the pain sense being much less marked on the left than on the right side. The disturbance extended upward to some extent and involved the region of the fifth nerve on the opposite side from the atrophy. The same area showed complete loss of temperature sense. As there was the disturbance in sensation in addition to the findings in the other cases, a diagnosis of syringomyelia had been made. No trophic disturbances were present as yet.

These three cases were presented to show the forms of atrophy that might occur and the differences between them. In Case 4 there was a pyramidal tract involvement, while in Case 5 the involvement was more centrally located, involving the pain and temperature fibers as they crossed over to the opposite side. There was a thickening of the vocal cords which accounted for the change in voice; there was no paralysis, the cords moving normally.

Such cases were not very amenable to treatment. If it was decided that the lesions were of toxic origin, as often happened in organic changes in

the spinal cord, efforts would be made to remove the infection and prevent additional trouble. The destruction that had already occurred, of course, could not be overcome.

DISCUSSION

Dr. Peter Bassoe asked regarding roentgen-ray treatment, stating that in syringomyelia they were dealing with an overgrowth of glia and gliomatous growth with caries formation, and it was known that the roentgen ray had an effect in inhibiting the growth of many kinds of tissues—such as on lymph glands and in proliferative changes in the skin—and it seemed reasonable to suppose that if the roentgen ray could be brought into use it might have an effect in checking the symptoms. No destroyed fibers could be restored but it might diminish the growth of the glia. This treatment had been used, especially in France, for about ten years and there had been quite favorable reports. The speaker has used it in a few cases of syringomyelia and other cases of tumors affecting the spinal cord and thought it exerted some influence. He thought it was worth trying, particularly because of the futility of the other known methods of treatment.

Dr. Hall stated that syphilis could produce symptoms exactly like these, but this disease was not present in these cases. He felt that multiple sclerosis as well as changes of this character in the central nervous system could be produced by some focal infection. He felt sure that clinically he had seen cases that could be traced back to the teeth, tonsils, or sinuses as the origin of changes in the spinal cord. Some cases of muscular atrophy where there was no positive history of syphilis were nevertheless proved to be due to that disease. The Wassermann test could not always be depended on in cases of tumor of the cord or brain. A positive Wassermann reaction was sometimes obtained on the blood when syphilis was not present, while on the other hand, cases of tabes sometimes gave negative Wassermann findings.

Dr. A. W. Rogers asked what the prognosis was in the case of transverse myelitis.

Dr. Hall replied that he did not consider it good. He had been under very thorough treatment for several weeks without any improvement.

Dr. Peter Bassoe stated that the man had received treatment for syphilis before there was any nerve involvement at all. The total paralysis developed within ten to fifteen minutes while the patient was in the Presbyterian Hospital being treated for a burn.

Dr. H. C. Stevens suggested that the cause of the atrophy of the tongue was the incessant action of the fibrillary contraction of the muscle fibers. The contractions continue throughout the whole period of atrophy and disappear with the regeneration of the nerve. The contractions occur not only in central lesions but in peripheral nerve lesions as well. There was not much justification for the theory of a trophic influence of the nerve on the muscle. In attempting to find a treatment for muscular atrophy it had occurred to him, following some experimental work, to attempt the injection of calcium, barium and magnesium salts. This was done on guinea-pigs after section of the sciatic nerve. Certain of the operated animals were treated with subcutaneous injections of salts known to have a sedative effect on muscular activity. Other operated animals were used as controls. The weights of the gastrocnemius muscles in the treated and nontreated animals were compared to determine whether the salts injected retarded the rate of muscular atrophy.

CHICAGO NEUROLOGICAL SOCIETY

Joint Meeting with Chicago Medical Society, Jan. 22, 1919

HERMAN CAMPBELL STEVENS, *Vice-President, presided*

WAR NEUROSES. Presented by DR. HUGH T. PATRICK.

Dr. Patrick said that the neuroses of the war just finished differed from those of peace times not fundamentally but principally only by the tremendous number and the high proportion of severe cases and of anxiety states. The term "shell shock" was first used as a convenient blanket to cover ignorance and a multitude of sins. Now it is an unfortunate term because it implies something new, portentious and not understood.

A convenient way to approach the subject of war neuroses is as the soldier approaches the disorder—by degrees. Some of us cannot comfortably adjust ourselves to the perplexities of civil life. In other words, an unusual trial is too much for us, we "go to pieces," develop a psychoneurosis. Some of our soldiers are barely equal to the adjustment of civil life and the added difficulties and apprehensions connected with mobilization and camp existence are too much for them. They cannot abolish the war, they cannot leave the camp; their only refuge is a neurosis. More stable individuals go through the home training and even the training just behind the lines without difficulty but the inordinate strains, mental and physical, of life at the very front make the situation insupportable. The soldier's deep laid instinct is to fly, hut honor, ideals and military machinery make this impossible. Occasionally a man escapes by self mutilation, occasionally by suicide. Others, unwilling to avail themselves of these means, develop a neurosis which is merely a psychological dug-out into which he creeps for safety. But he does not deliberately do it; he is not a malingerer. He is merely a sentient human being whose instincts are too much for his ideals, intellect and stability.

SOME LESSONS IN PSYCHIATRY TAUGHT BY THE WAR. Presented by DR. H. DOUGLAS SINGER.

1. *The Size and Importance of the Problem of Mental Health.*—Discharges from the Army for mental or nervous disability were made in 1.6 per cent. of men accepted by the exemption boards. These were three and one-half times as many as for tuberculosis. The failure to exempt by the boards may have been due in part to the instructions given to the draft boards but was also due to lack of training in psychiatry on the part of physicians. This lack of trained psychiatrists was also emphasized by the difficulties experienced by the Army in securing them. Just as in Army life, so in the civil community, mental and nervous disability are most potent factors in social inefficiency, and there is the same need for physicians with psychiatric training.

2. *Types of Breakdown in the Army.*—The striking fact has been a great increase in psychoneuroses without corresponding increase, and possibly even a diminution, in the frank insanities. No new types have been observed in either form. These facts suggest that even a comparatively well constituted man may develop a neurosis but not an insanity, although they might be explained by the elimination of those of poorer construction at an early stage. They also emphasize the importance of environmental factors in determining a mental breakdown. It must further be remembered that we have no statistics concerning the frequency of psychoneuroses in civil life.

3. *The Effect of War Conditions on the Civilian Population.*—In England the commitments for insanity have steadily decreased, there being 3,278 fewer in 1915 than in 1914, and 3,159 fewer in 1916 than in 1915. This cannot be explained by assuming that the diminution in the civil community was due to army enlistment of those who would otherwise have been committed, for the number of insane in military hospitals on Jan. 1, 1917, was only 2,000, and of these only a proportion would need commitment. In Russia, on the other hand, where the organization for the care of the insane before the war was very defective, the number of commitments has increased. In New York the commitments during the forty-four months following the beginning of the war were 3,995 more than in the forty-four months preceding the war.

The English figures suggest very strongly that better social organization, improvement in conditions of employment and recreation with possibly the closer regulation of alcohol are important factors in preventing insanity. It is also noteworthy that crime has diminished very markedly, although for a time juvenile delinquency increased owing to lack of proper supervision and control.

4. *Effects of Treatment.*—Prognosis even in such disorders as dementia praecox has been decidedly better than in peace times. At the Renfew district asylum in England for military cases, among 500 patients discharged 39 per cent. are reported fully recovered (31 per cent. returned to duty), while only 27 per cent. were committed to a civil asylum.

These figures suggest that prompt recognition with immediate and adequate treatment are highly important even though it is true that the conditions under which the breakdown occurred were very severe and not liable to be met in civil life. They also again emphasize the importance of environmental factors in determining the breakdown. They should teach us the immense importance of first-aid stations or hospitals with adequate facilities for treatment in every community.

REPORT OF NEUROSES IN SOLDIERS, WITH PRESENTATION OF CASES.

Presented by Dr. Peter Bassoe.

Case 1.—A private soldier, aged 27, was stunned by a shell explosion on the battlefield in France in March, 1918. He remembered nothing for five days, and then found himself unable to move the left arm and leg or to use the left eye and ear. The whole left side was devoid of sensation. There was a superficial wound of the left leg but none elsewhere. By June he could move the leg well and the arm a little. When he returned to this country in August, he walked well and could raise the left arm to the horizontal, but the grip was so weak that he could not hold anything in the hand. In September, while he was in bed at an eastern camp, a gas stove exploded with a loud noise about 50 feet away from him. He was not injured, but became very nervous, shook all over, was not unconscious. Since that time he has not been able to make any movement with the left upper extremity.

When first seen by Dr. Bassoe on Dec. 4, 1918, he walked well but the left arm was flaccid and completely paralyzed. There was complete left hemianesthesia, involving all forms of sensation. Even a very strong faradic current, applied with a pointed electrode to the tongue and sufficient to curl it up completely, evoked no sensation. The limitation of the anesthesia at the median line was very sharp. He could not distinguish objects with the left eye, nor hear spoken words or the watch with the left ear. The tendon reflexes

and superficial reflexes were normal. The paralyzed muscles reacted normally to faradism and galvanism. Examination of the eye by Dr. Brown Pusey and of the ear by Dr. H. C. Ballenger revealed no lesion of these organs.

Several faradic treatments have been given without any change in the patient's condition.

CASE 2.—A private soldier, aged 37, a railroad switchman by occupation, enlisted in the engineering corps and worked on the railroads in France some distance from the firing line. In August, 1918, while on a furlough he spent the night at a hotel in Rouen. During the night an enemy airplane dropped a bomb which exploded outside the hotel with sufficient force to throw him out of bed, but he was not injured. Thirteen days later while getting on a train far away from the battle-front he fell off the last car but was not injured, though stunned and frightened. He began to tremble all over, could not speak above a whisper, nor feed himself. After a time the tremor became limited to the right leg and has persisted.

Tremor of the right leg was the only symptom when the patient was first seen by Dr. Bassoe on Dec. 6, 1918. He improved somewhat and felt sufficiently encouraged early in January to return to his former occupation of switchman. He worked only three days, however, when he became extremely nervous and finally so excited that he was unable to walk away from the railroad yard and an ambulance was called to take him home. No evidence of organic disease was elicited.

CASE 3.—A young soldier, whose mother is nervous, while in camp in this country, in June developed a coarse tremor in right leg. This was the principal feature when the patient was seen on Oct. 23, 1918. There was also moderate tremor of both hands. The reflexes and sensation were normal. No signs of organic disease.

CASE 4.—A private soldier, aged 30, formerly a telephone operator, was said to have had a sunstroke while in the Army. He had nervous attacks with trembling and palpitation, and in December, 1917, was discharged from the Army with a diagnosis of multiple sclerosis. Examination by the writer in August, 1918, failed to reveal any signs of organic disease. He was apprehensive and nervous, with a coarse tremor of both hands.

In most of the nervously disabled soldiers seen by Dr. Bassoe there has been an association of local trauma and superadded hysterical phenomena. Examples are the following:

CASE 5.—A private soldier, a Polish Jew, aged 23, fell off an army wagon in September, 1917, and sustained a fracture of the right foot, which healed without deformity. When examined in August, 1918, he could barely step on the foot, all foot movements appeared to be very weak and to cause pain. An orthopedic surgeon called in consultation found no physical cause for the difficulty. There was a little atrophy of the leg muscles, but the reflexes were normal. There was anesthesia of the entire foot and the lower half of the leg. The patient later contracted influenza and died in October, 1918.

CASE 6.—A private soldier, aged 24, a Roumanian Jew, fell on an icy walk at a camp in this country and had pain in the right arm for two months afterward. The hand was cold and blue. When examined in August, 1918, the arm was very weak and completely anesthetic. There were pseudocontractures of the wrist and fingers. The reflexes and electric reactions were normal.

CASE 7.—A soldier sprained his shoulder in October, 1917, while in camp, and following this the shoulder gradually pulled down and the back became curved. When seen by Dr. Bassoe in August, 1918, the patient presented the appearance of so-called camptocormia. This man has gone to his home. A letter recently received from him shows a mental attitude exactly like that of the usual damage-seeking, traumatic neurosis patient of civil life. He says: "When I entered the United States service I was as robust and as stout as any man, and since then I am unable to work. I have to take a measly $30 a month when I should draw $57.50. This is what the insurance policy calls for, but if they want to give the balance of my claim to some faker, why it is up to them. . . . They won't have a real man alive after another year of grafting."

CASE 8.—A soldier, aged 23, had served in the British Army, and at Mons, had been wounded by shrapnel in the left side of the neck, and at Loos, above the left eye. Some shrapnel and bone had been removed from the forehead. A month after the operation he began having attacks in which he stated that he would fall and become unconscious for from ten to fifteen minutes. The attacks were preceded by a sensation of a ball coming from the left side of the neck and rising into the throat. They occurred about once a week. In November, 1917, that is, about three years after his injuries, he was admitted to the Presbyterian Hospital. When first seen there he stated that he had been blind in the left eye ever since the second wound, but he was able to count fingers well with this eye and the fields were only moderately narrowed. The fundi were normal. When sensation was tested and the vicinity of the scars in the left side of the neck was touched with cotton he jumped up and said it felt like rough scratching. Immediately afterward he could feel neither cotton nor a pin prick in this region, and the same condition existed about the scar on the forehead. All reflexes were normal. The roentgenogram of the head was negative. While in the hospital he had several attacks of unconsciousness and others in which he seemed dazed and irrational. After seeing a patient's stomach aspirated he said he felt queer and then proceeded to vomit. Altogether, the attacks suggested hysteria rather than epilepsy. One attack began with a choking sensation, then he moaned with pain which passed from the left side of the forehead to the neck, and he became unconscious. On awaking he was hilarious for a time, then again moaned with pain. While in the hospital his urine showed considerable albumin and granular and epithelial casts, but he had no edema and the heart was normal. He was discharged, Jan. 2, 1918, and later admitted to the Psychopathic Hospital, where he died on May 4, 1918. A necropsy by Dr. LeCount failed to reveal any brain injury, but there was a well marked chronic nephritis, with ascites and edema. Uremia was considered the cause of death.

MENTAL CASES

CASE 9.—A musician, aged 18, fell in love with a young lady in the summer of 1916. She became pregnant and a marriage was planned. The girl was to go home for two weeks and when they parted, on looking back, he saw tears on her left cheek. He never saw her or heard of her again, as some days later he enlisted in the Army without communicating with her or letting his family know. He was sent to Panama and after six months he began to think that this girl was there. On hearing a woman behind him in the evening he would get a distinct vision of the girl's face with tears on the left cheek, and hear her sobbing. On at least half a dozen occasions he

turned around and asked, "Woman, why are you crying?" whereupon the accosted woman accused him of being drunk and he felt very sheepish. He always instantly realized his mistake, but the vision constantly recurred, always when he was looking backward. Some time ago he came back to his home town and had no sooner stepped off the train then he had the same vision and heard the sobbing, but did not dare look around. A few days later he went to the nearest military post, asked medical advice for insomnia, and requested permission to turn in his pistol as he feared he might injure himself. He had good insight and showed no other mental symptoms.

In a recent letter he states: "Through will power and the care of myself I believe this case of mine will be cured. . . . The tropics and its diseases are all I dread now and my only hope is to get out of these soon. Two years in a place with no diversion or pleasure is enough for any white man, or else insanity would not predominate the troops so." Later the Army surgeon to whom he had first applied for aid reported that the patient has given up his search for the woman, has married another and is returning to duty.

CASE 9.—In a small town near a large military establishment six or eight women within a month had been frightened by meeting a man in uniform at night who said "Look" exposed his genitals and then walked on. The police finally arrested a young man wearing the kind of uniform described and though not caught in the act he promptly confessed. He is a man, aged 24, of a good family, well educated, who never dissipated in any way and never had sexual intercourse. He admits having masturbated occasionally before enlisting at the beginning of the war. He could not give any reason for his action and showed nothing abnormal mentally except a lack of realization of the possible consequences of his actions if his identity should become known. He apparently had reflected very little about it, had not at all been upset, but readily admitted the seriousness of the matter when it was pointed out to him. Whether this exhibition is merely a feature of a compulsion neurosis in a neuropath or an early manifestation of dementia praecox remains to be seen.

DISCUSSION

DR. GEORGE W. HALL related his experience in military camps examining nervous and mental cases culled from 60,000 to 80,000 soldiers. Ordinary neurasthenics were prevalent, hyperthyroidism not uncommon but the incidence varying greatly with the habitat of the recruits. Cases of mental deficiency attracted attention because of the large number in the draft which had to be weeded out. The proportion of these also varied enormously with the geographical source. From Kentucky the mentally defective among the whites seemed to outnumber those among the colored. This would not hold for some of the other states.

A few cases of infantilism were sent into camp but were promptly dismissed because of the inevitable effect they would have on the normal soldiers. The number of malingerers was comparatively few.

The speaker reported in detail one case of *camptocormia* (bent back), a name given by Souques to cases of forward flexion of the trunk with or without lateral inclination. Many such cases had been observed during the war both here and abroad. Rosanoff-Saloff had gathered particulars of sixteen unpublished cases and had treated the condition very fully with ample illustrations. The disorder is purely or almost purely functional, and the patients generally rapidly recover when proper treatment can be given.

Capt. Harry R. Hoffman had had an experience of eleven and one-half months in camps in this country and ten months abroad as division neuropsychiatrist. He went through all the big "pushes," with the exception of Chateau Thierry, and stated that much depended on the place where the examiner was situated when he had cases of neuroses to deal with. He stated that Major Pollock, whom Dr. Patrick had quoted, saw cases which did not come to him for two weeks after they had left the firing line. The division psychiatrist was stationed directly behind the front line where mental and nervous cases were classified as well as possible and dealt with at once. All other cases of injuries were classified and sent to the evacuation hospitals. The cases of neuroses among the American soldiers could not be compared with those of the French and British, for the reason that the American soldiers always had been on the offensive and never assumed the defensive. Therefore, they rarely or never entrenched themselves for any length of time. In the battle of the Argonne, the first day of the great push (September 27), only very few cases of neuroses came in, but during the following days they began to come in rapidly. On account of unfavorable weather conditions, insufficient clothing, lack of water and scarcity of food, in a very few days they had 1,400 cases on the outside of tents, without blankets, without litters, the men practically lying in the mud with nothing to cover them but their rifles. There were also 800 at an advanced dressing station.

The majority of cases of so-called war neuroses in his opinion were exhaustion neuroses, coupled with the intense firing at the front. A large number of cases of definite neuroses were found in noncommissioned and commissioned officers. In this class there was the same exhaustive neurosis plus the responsibility. The same applied to civil life, in that very seldom did a bricklayer have nervous prostration. It was usually the higher intellectual types of men who had the exhaustion neuroses when the impending strain came. There were no cases of psychoses at the front during the active fighting.

There was great lack of facilities for treating these various conditions, and the cases could not be treated individually in accordance with orders. They succeeded, however, in sending back to the front line 50 per cent. of these patients after their faces were washed by the Salvation Army girls and hot coffee was given to them by the Red Cross. Much, he said, could be accomplished in dealing with these patients by persuasion and suggestion. The two principal factors in war neuroses were early diagnosis and prompt treatment.

Capt. William D. J. de Napheys corroborated the statements made by Captain Hoffman, and said that if the cases of neuroses were handled properly the men recovered to a surprising extent. The men that were picked up on the field or in the trenches were the ones that could be returned to duty if they were given a cup of coffee, a cigaret and a good night's sleep. The farther back from the firing line the neuroses cases were taken, the more difficult it was to cure them.

Dr. J. O. Cobb, U. S. Public Health Service, said that at present one of the great problems is that of claims. The men had found out about war insurance, and many of them had doubtless gone into the Army with the idea of getting some of this insurance. He was certain this was true of a few cases he had seen at the hospital. Some of the men coming back from overseas were not altogether heroes, and in the beginning they figured out how they were going to get some of this war risk insurance. Those who were dealing with neurotic cases knew that some of the men were worthy of good treatment from

the government, while others were not, but just where the dividing line came was difficult to determine, not only for specialists in nervous and mental diseases, but for general practitioners. The joint cases were very hard to deal with, almost as hard to deal with as the traumatic neuroses. The war was not going to end the traumatic neuroses cases—not all of them. Many of them were going to continue to be traumatic cases right along if they could get their war risk insurance; they would not get well because they were going to have this pension, and after this pension is settled on them they would get well just as the armistice cured a great many. The practitioner must be on his guard in dealing with them. Some of the traumatic neuroses cases recover because the conditions of war are ended and they are anxious to get back home and be discharged. General practitioners and specialists might have some of these men coming to them because of having been refused treatment after their discharge and refused compensation by the War Risk Bureau, and they will have to decide whether such men have genuine neuroses or not.

NEW YORK NEUROLOGICAL SOCIETY

Three Hundred and Sixty-Eighth Regular Meeting, held at the Academy of Medicine, Dec. 3, 1918

FREDERICK TILNEY, M.D., *President*

A CASE OF INTRACRANIAL INFILTRATING ANEURYSM AT THE BASE. Presented by DR. S. PHILIP GOODHART.

The patient was a middle-aged woman who gave a history of a long standing rheumatic disorder for which she had taken a number of cures. There was at present evidence of arthritis, especially of the hands and feet. She had also suffered from headaches, mostly confined to the left side. Three years ago these headaches suddenly became intense and persistent and were accompanied by a ringing sound in the left ear. To this ringing were finally added noises of different character which, after a period of six weeks, involved also the right ear. The patient noticed that the headache was less when lying down, and that she could diminish the noises in both ears by pressing deeply into the soft parts of the neck slightly below and a little anterior to the left ear, manifestly over the carotid. This also diminished the headache to a large extent. The left eyelid was edematous in the morning. There was a point of tenderness over the left mastoid, hyporeflexia of the cornea and a relative diminution of all forms of sensation over the left half of the body, doubtless purely functional. On auscultation a distinct bruit was heard behind both ears; with the aid of a soft rubber stethoscope a loud bruit could be heard in the right ear synchronous with the pulse. The eye-grounds were practically normal. Systolic blood pressure was 130, diastolic 80. Roentgenologic examination revealed no abnormal bony changes. The case was probably one of intracranial aneurysm at the base posteriorly.

DISCUSSION

DR. L. PIERCE CLARK remembered a woman who had an aneurysm of the left frontal sinus and acute exophthalmos. The condition was diagnosed first by an ophthalmologist. The ear bruit on auscultation did not decrease on sitting up; in fact, it was intensified and she had violent vertigo in lying down.

This condition was rarely diagnosed. The speaker had seen but two other cases. The only thing to be done was to use iodids, but one patient got on better by using morphin.

Dr. Charles A. Elsberg remarked that he had seen a metastatic new growth give exactly the same symptoms as those of Dr. Goodhart's patient.

A METHOD FOR IMPROVING THE TREATMENT OF FACIAL PARALYSIS. Presented by Dr. Charles H. Jaeger (by invitation).

The patient was a child who three years ago had complete left facial paralysis. Following orthopedic principles which had been found to be sound in poliomyelitis, it was decided to rest the muscles, avoid irritaton and motion and prevent distortion. When the patient was brought to Dr. Jaeger, he decided that here was a chance to see what complete rest and maintaining the physiologic position and shape of the muscles would do to restore the normal tone of the muscles. The problem seemed to be one of holding up the affected muscles permanently. The simplest thing was to have some sort of a net made into a cap to fit snugly over the head and then to apply a brace consisting of two strips of adhesive plaster with attached ribbons, the ends of which could be tied into the net cap, while the cheek was drawn up to correct the sagging; or a small hook could be attached to the end of each ribbon and these hooks could be slipped into the net cap. This procedure was followed, the child willingly cooperating in the treatment, and the attachment, with frequent renewals, was worn constantly for three months. Within one week after applying the brace, the condition showed signs of improvement. The facial expression had become more natural, there was less drooping of the left corner of the mouth and the left eyelid could be more nearly closed. At the end of three months the child was entirely cured. She was not seen again for nearly two years, but three weeks ago her mother had brought her to Dr. Jaeger's office with a history of Spanish influenza and a return of the paralysis.

DISCUSSION

Dr. J. A. Booth considered that Dr. Jaeger's arrangement of the adhesive plaster, instead of a hook to fit in the corner of the mouth, might be an improvement on a method of treatment that had been in common use for years.

Dr. L. Pierce Clark said that after all it must be remembered that however severe facial paralysis might seem, the great majority of these cases practically recovered spontaneously. It was only in the severest grades that one might expect contractures, and then the majority of the contractures were in the line in which the splint was here applied. It might be well to see what this method would do to overcome the marked sagging following mastoid disease and injuries of the face of severe grade. In regard to hypoglossal anastomosis and the relative improvement in Bell's palsy, Sir William Gowers said that whenever the paralysis was shown, by electric reactions, etc., to have existed over three months, some part of the function of the seventh nerve would remain lost. He had a patient who had his beard trimmed by a tonsorial artist so as to make both sides of the face appear symmetrical, and the improvement was so great that his own friends did not know he was paralyzed.

Dr. William M. Leszynsky did not consider Dr. Jaeger's analogy between the paralyzed facial muscles and those of an extremity affected by poliomyelitis a good one; but for many years he had been accustomed to recommend

the use of a small hook inserted at the angle of the mouth, and retained in position by a thin strip of adhesive plaster fastened over the malar bone during the early stage of facial palsy, in order to give support to and prevent stretching of the paralyzed zygomatic muscles. He thought that Dr. Jaeger's idea of the application of the plaster to the skin in order to elevate and support the uper lip was preferable to the hook which occasionally set up irritation of the mucous membrane. The additional strip of plaster over the masseter, as demonstrated in this case, however, was superfluous and could be dispensed with. It should be remembered that in many cases which appeared severe at first, recovery might take place spontaneously. If recovery in bad cases could be hastened by simply keeping the paralyzed muscles at rest indefinitely, then all of the customary methods of treatment such as electricity, massage, etc., could safely be discarded. Attempts on the part of the patient at voluntary effort to move the facial muscles has always proved one of the most important measures leading toward ultimate recovery.

Dr. A. P. Lensman, Seattle, Wash. (by invitation), said that having had a unilateral facial paralysis himself, he had tried every method to correct it, with the exception of the use of adhesive plaster, and his personal experience was that rest was not an effectual method of treatment. He had a great deal more success with diathermia, though it did not have any effect on the ptosis. The discomfort of the condition came more from the contraction than from a nerve pain, and the patient always felt very much better for some time after massage. The principle of rest for contracture did not appear to be a physiologic measure. It might be that the use of the adhesive plaster itself, its composition, had some effect on the circulation and thereby brought about the result achieved by Dr. Jaeger, but that a cure was effected by the immobility produced by the brace itself would seem to be doubtful.

Dr. Smith Ely Jelliffe said in response to Dr. Leszynsky's suggestion that "if this form of treatment be effectual we will have to lay aside all our old methods of handling these paralyses," that he hoped that we would wake up and learn that the older methods were inadequate, if not stupid, for physiologic stimulus of muscle action was not obtainable by the old methods of massage and electricity. Real stimulus was received through the motor cortex through ideation. In recent experiments in physiologic laboratories where extensive studies on peripheral nerves had been carried out, they had shown that electrical stimulus was not a stimulus at all, and that degenerated nerve processes were not helped in the slightest by electric stimuli.

Dr. Richard B. Kruna said the effect of massage was the accomplishment of concentrated rest, as elimination of the products of fatigue thereby took place considerably more quickly than if the muscle were left to itself. Neither rest alone nor stimulation alone would accomplish what one wanted to achieve, but a combination of the principles of stimulation and of concentrated rest by massage and the principles of ideation together had to be utilized. In the treatment of infantile paralysis a combination of the three often gave a better total result than under the application of any single method.

Dr. M. Neustaedter asked what was the condition of the palpebrarum.

Dr. Jaeger, in closing the discussion, expressed his gratification that the subject had aroused so much interest from the society. He himself felt that as this was merely a single experience, one could not from this make general rules or laws governing the treatment of all cases, especially those of nerve injury during a mastoid operation. He presented the child to show results in

this particular case where electrical stimulation had been carried out for almost a year without benefit, and the opposite of this treatment, or complete rest, had brought about the most satisfactory results.

There was absolutely no similarity between this method of broad external support and Dr. Leszynsky's method of dragging up the cheek by means of a small hook placed in the corner of the mouth and fastened over the ear. The latter was unphysiologic; it produced traumatism to the already weakened muscle by attempting to carry the entire weight of the cheek on the very small area engaged by the hook. Dr. Jelliffe's remarks coincided with his own views about the regeneration of muscle; that is, that it must be a central regeneration and that the muscle should not be regarded as a single entity but in its relation with the brain and cord. It was one organ in three parts, and one could not, by applying external stimulation, expect regeneration from the muscle when the normal physiologic process was ideation and central stimulus. That was the modern treatment of poliomyelitis, and that was the way in which the speaker expected to continue to treat cases such as the one he presented. The two plasters were applied for a very definite reason: the first plaster was placed over the affected muscle, the second alongside of it to assist in supporting the weight of the cheek.

TEN YEARS OF WORK OF THE NATIONAL COMMITTEE FOR MENTAL HYGIENE AND SOME PLANS FOR ITS FUTURE DEVELOPMENT. Presented by CLIFFORD W. BEERS.

Mr. Beers, founder and secretary of the National Committee for Mental Hygiene, delivered this address by invitation of the society. He began with a brief explanation of why he published his autobiography, "A Mind That Found Itself," which was a frank description of conditions as he saw them while a patient in hospitals for the insane from 1900 to 1903. His motive in publishing his book was to organize a movement to improve these conditions and to help prevent mental disorders. Following this, he was instrumental in organizing a society with these aims in view and to do work similar to that done by another national agency in the fight against tuberculosis. The success of the National Committee for Mental Hygiene, which was founded in 1909, had in part been due to the fact that it did not antagonize the hospital officials, but gained their cooperation by proving to them that it was working also in their behalf. The preliminary plan was formulated in 1906, and in 1907 the speaker got in touch with Dr. Adolf Meyer, who believed that results could be obtained by inducing a group of psychiatrists and others to participate in forming a national committee, the purpose being to improve conditions among the insane and to institute methods for the prevention of mental troubles. In considering a title for the committee, the inclusion of all these words would have proved unwieldy, and Dr. Meyer suggested the use of the phrase "Mental Hygiene," which proved to be a very happy choice, as it included the idea of prevention.

It was not an easy matter to organize the National Committee for Mental Hygiene. The organization was founded, as stated, in 1909, but it was two and one-half years before funds for initiating the work were secured. Mr. Henry Phipps then contributed $50,000 for the first three years of work, and Dr. Thomas W. Salmon who, during the war, had been in France in charge of the neuropsychiatric work of the American Expeditionary Forces, was appointed medical director.

There were many difficulties encountered in beginning the work, as there was no other organization's experience to draw on. In consequence, the first task was to gather reliable data regarding a variety of subjects. The most immediate necessity that presented itself was to get accurate information regarding the institutions for the insane. Before very long a wealth of information poured in.

The fact that the initial work was under the direction of Dr. Salmon was very fortunate. He at once won the confidence of every one with whom he dealt. The managements of the various hospitals welcomed the help of the committee and extended every assistance. The next work attempted, after gathering information and starting the library, was that of surveys. The method of making these was to send a well-trained psychiatrist into a state to make a personal study of the situation, yet not necessarily to look for abuses. The committee did not resort to unwise publicity by overfeaturing shortcomings, but tried to enlighten the public as to actual requirements so that, when necessary, new laws should be enacted. Twelve or fifteen surveys had been made to date, with funds provided for that purpose by the Rockefeller Foundation, except in South Carolina, Texas, Wisconsin and Pennsylvania, which were financed in other ways. After a report of the conditions existing in South Carolina was made to the legislature of that state, it appropriated $500,000 for a new institution, and today South Carolina had a modern state hospital, whereas prior to that, conditions were on the same low scale that obtained fifty or more years ago. The people of Texas made an appropriation of $600,000 for the remodeling of one old institution and the building of one new one, for it had been found that for lack of places to care for them the insane were held in jails and almshouses. Similar conditions were common in other states, which, fortunately, however, were fast decreasing in number. It was the hope of the committee that in time the entire country might be surveyed. If funds for this sort of survey work continued to be available it would be possible to put an end to the so-called legislative investigations which did more harm than good, as surveys made such legislative investigations unnecessary.

The activities of the National Committee also included work in behalf of the feebleminded. Indeed, this phase was developing more rapidly than any other. Surveys, as was to be expected, formed an important part of it, and far-reaching effects were being produced in a number of states. Another special activity consisted of the studies in the psychopathology of crime. Many of those present were familiar with the work of Dr. Bernard Glueck at the Psychiatric Clinic at Sing Sing Prison, which had been supervised and financed by the National Committee. His studies led him to the conclusion that the mental factors were the main ones in the problem of crime, and must be considered in any efforts at prevention of crime. The work done at this clinic had already influenced the management of crime in these states.

Another activity lately started was the Bureau of Uniform Statistics of the National Committee. Statistics of mental diseases were most inadequate, and in addition had heretofore not been gathered on a uniform basis. Within the past year, however, 144 of the 1,500 hospitals for the insane in the United States had agreed to use uniform statistics blanks, all of which were sold to them at cost by the commitee. The work was also being extended into Canada, where the idea was cordially welcomed. In time dependable statistics on mental diseases would be available.

These were some of the committee's special activities. The National Committee was carrying on educational propaganda, which was having its effect,

not only among physicians, but among the general public. Mental hygiene exhibits had been found to be most useful in enlightening the public, as were public lectures. It was the intention of the committee to create as soon as possible new exhibits with duplicate sets for lending purposes.

When the phrase "mental hygiene" was adopted, more was accomplished than was realized at the time. The solution of the problems of feebleminded-ness, prostitution, vagrancy, delinquent children, were all included under the term "mental hygiene," so the scope of the work originally planned had been greatly extended.

Because the National Committee was already in existence when the United States entered the war, it was used as a rallying point, and was able to lay out plans for the United States Government in providing proper care for the nervous and mental cases in the Army. Through the war work of the committee some 50,000 recruits had been rejected for various nervous and mental conditions, and the analyzing and classifying of these cases would provide wonderful material for research into the causes of these conditions. The war had undoubtedly done a great deal for the sciences of neurology and psychiatry, especially in the way of securing public recognition of their importance.

Some eighteen state societies for mental hygiene had been organized in this country and a number of states. It was hoped that within a few years all states would be organized, and all of them would have such agencies. Furthermore, an international movement had been begun. The speaker had personally organized the committee in Canada, where he met with the most enthusiastic cooperation, some of the most prominent people in the Dominion having taken a personal interest in getting the work under way. Meetings were held at Quebec, Montreal, Toronto and Ottawa, and everywhere the movement was most cordially indorsed. A report had lately been received from the Canadian National Committee (which was only 6 or 7 months old) showing wonderful results. It was doing war work, carrying on studies of different kinds, notably in regard to immigration and the correction of laws, and in regard to juvenile delinquents, etc. After ten years of work it might safely be predicted that the mental hygiene movement had come to stay, and that it would in time spread to all parts of the world.

DISCUSSION

Dr. L. Pierce Clark said that Mr. Beers had presented the problems confronting the Committee for National Hygiene and the work they were doing in so fascinating a manner and so completely that there was hardly anything left to be said. It was surprising to note what they had accomplished while laboring under the disadvantage of being so shorthanded and having such a small amount of money, and yet the good will and good offices of the different members of the committee were always generously furnished. Dr. Salmon had once said he hoped the time would come when the committee would get all the obvious work done through laymen and the medical profession as a whole, and then be able to turn its attention to research and investigation. Of course, there had already been research and investigation in the directions mentioned by Mr. Beers, but there was still considerable to look forward to in the functions medical hygiene would meet in the domain of research. One of the most important functions in future of the National Committee should be to search into the nature of the economic and social factors that played a rôle in the induction of mental disorders. To carry this out to best advantage,

there should be mental hygiene clinics where all types of conduct disorders could be investigated and treated on the basis of their causative defect. The scope of such a clinic should embrace such general conduct disorders as defective nursery ethics, disorders of puberty and adolescence, and lying, thieving and swindling, before they advanced so far as to require legal measures. Unfortunately, in the past many of these patients had been sent to medical clinics where they were not given proper attention, as they had only too frequently been considered as nonmedical. There should also be departments in the clinics which would deal with defective adaptations in the domestic relations, and with economic and social maladjustments. The coming need at present, so far as could be foreseen, was to socialize a part of the psychiatirc activity outside the institution and clinic per se, and make it a real part of the community life. It had already been learned that one had to reach the individual at an early period of life, and therefore earnest attention should be given toward reaching back in point of time toward the earliest life of the psychopathic individual, so it was worth while considering whether the Committee for Mental Hygiene could not establish an ideal type of clinic of mental hygiene to be worked out first in some large city. Educating the schoolchildren should be handled scientifically, and an effort made toward a better attitude and relationship to society as a whole. Some of the functions of mental hygiene were gradually being extended in the courts. To do this work, there had to be trained workers. The social workers, the individuals who had cared for society's psychiatric attitude toward the public, needed to be augmented. There was opportunity here for the after-war activity of the intelligent men and women who had been engaged so earnestly in war work committees, Y. M. C. A. enterprises, etc., and from them would come a great revival of humanistic interests helping the whole problem of mental hygiene in research as well as in practical activity. If this idea could be arranged and developed it would serve a great function for the future and would prove of benefit to the whole community as well as those psychopathically inclined. It was time for the fields of psychiatry and neurology to be regenerated, and this could come through an extension into peace conditions of the reconstruction planned during war.

Dr. Smith Ely Jelliffe said that from the beginning of the movement which Mr. Beers started, he had felt, in watching its gradual evolution, that a real genius for this type of work, an account of which has been epitomized here tonight, was with us, and in all activities of our related societies he felt sure that no one could do more than to lend hearty support and cooperation to work so ably started and so ably carried on.

Book Reviews

WAR NEUROSES. JOHN T. MACCURDY, with a Preface by W. H. R. RIVERS, M.D. The University Press, Cambridge, 1918.

This book represents a revision of an earlier paper published in the Psychiatric Bulletin. What differentiates it from other studies on war neuroses is MacCurdy's attempt to trace the development of, and the forces at work in, these neuroses from the psychological point of view; and he does it very cleverly and convincingly. According to MacCurdy the fundamental reason for the breakdown is as follows: There is normally in every one a deep primitive instinct toward brutality repressed by forces belonging to the instinct of gregariousness or the social instinct. In war a premium is put on blood thirstiness, hence here the primitive instinct finds an outlet which on account of the duty involved also satisfies the social instinct. This is what we call a sublimation. This sublimation is more difficult to maintain in the present trench warfare than formerly, because there is no compensation by the excitement of more active operations, by satisfaction from hand to hand fight, joy in general prowess, etc. The breaking down of this sublimation, the consequent inability to adapt to the situation and the assertion of the selfish instinct of self-preservation then bring about the neuroses. He tells us that officers develop chiefly "anxiety states," while privates develop "conversion hysterias." It could be shown that at a certain stage symptoms appear that seem to be specifically directed against the individual's capacity to fight, and it is important that MacCurdy's questioning revealed the fact that both types of cases have at one point a conscious desire for release—the privates in the form of a disabling malady, the officers, whose greater sense of responsibility does not permit them to play with any failure to meet responsibility short of death (which also represents a sacrifice), in the form of a wish for death. How the wish for a disabling malady in the private leads to a conversion hysteria is, of course, simple enough. The hysterical symptom represents the fulfillment of the wish and the patient's attitude toward it is much like the attitude of a man toward a wound. The transformation of the death wish into an anxious state is more complicated and the theory advanced by MacCurdy can scarcely be more condensed than the form in which he gives it in his chapter on General Psychological Considerations, to which the reader is referred. It might here be added that MacCurdy, like many others, observed that wounded soldiers do not develop neuroses, obviously because the wound represents a release which makes that of the neurosis unnecessary. On the other hand, a neurosis may later arise when the return to the front again becomes imminent. MacCurdy also devotes a chapter to heart neuroses. We shall here speak only of the conversion hysterias and the anxiety states.

The inquiries regarding the make-up have not infrequently shown certain difficulties of adaptation before the war. In ordinary life the most difficult adaptations are those connected with the sexual instinct, and although this is not involved in the war neuroses it is the constitutional defect behind this which makes the patient liable to succumb to the strain of the war. Therefore, inquiry into the make-up is made to get a rough idea of how resistant the patient had been to the most disturbing influences of life.

Evidently when getting to the firing line an initial fear, even with desire to run away (appreciated as absurd), is very common, as is also horror at seeing mangled remains of others, and the like. This first reaction to the war situation is very interesting. It either is represented, as we have just said, by fear, less commonly by a kind of spurious elation, facetious remarks and motor tension. Still more unusual is languor accompanied by depressive affect or lethargy which may be so marked that the man goes to sleep. None of these symptoms are indicative of the degree of future adaptability. But all these situations are adapted to by the great majority.

Just as the peace neuroses are preceded by a gradually growing difficulty in adaptation, so we find it here. The first symptom of the anxiety states is fatigue, caused by obvious physical factors, but also by mental ones, such as the routine, the demands for constant alertness, speediness of decision, complete self-confidence, spontaneous eagerness, etc., all of which have to be maintained for hours or days often without sleep, adequate food, etc., and a great many other factors. The symptoms of this fatigue are tenseness, irritability, difficulty in concentration, tendency to start at sounds, especially shells. At the same time we find difficulty in getting to sleep, hypnagogic hallucinations with repetition of day scenes but with insight and without fear. The dreams are also repetition of day doings, but represent the situations in such a way that the patient does not get anywhere. There is sudden waking up with a jump. This of course interferes with sleep. Then with the real breaking down of the sublimation comes fear and horror at the sights around him, obsessional dwelling on the difficulties, inability to keep his mind from injury, general thoughts of pacifism and pity for the enemy. Then also inability to say where the shells came from, fear about them and fear of being unable to hide the fear. At this stage MacCurdy always found that the patient retrospectively gave an account of conscious desires for some release which, as we have said, in officers do not take the form of incapacitating wounds or being made prisoner (although the latter is dreamed about at this stage) but of death which represents the most complete release, and is moreover compatible with standards of duty. Therefore, at this stage we find not infrequently reckless acts, also thoughts of suicide performed in a way which could not be considered as such. When thus the death wish is fixed, the patient has arrived at a stage when a physical or mental accident precipitates a complete breakdown. Such accidents are an explosion of a shell, horrible sights, dangerous situations, burial with earth thrown over him. But the precipitating situation may also be produced by a refusal of leave which was expected, and the like. Explosion of a shell may produce either a brief unconsciousness by actual concussion or may poison the individual with gas, whereas burial seems to act merely on the basis of a mental shock. The acute symptoms may be ushered in with stupor which was not observed by MacCurdy, since he saw the patients later, but, based on what the patients told him and on what others observed, he assumes very reasonably that the latter may be organic or functional. The functional stupor may represent the "acme of fear" (immobility, trembling, sweating, shallow breathing, dilated pupils) followed by a dazed stage with inactivity, numbness, etc. In other cases the hypnagogic hallucinations at once pass over into states associated with fear and with a content of men advancing with bayonets, etc. More particularly there are now pronounced nightmares with marked fear. They also have a similar war

content. All this increases the fatigue greatly. There may be low blood-pressure, tremors, abasia, certain thyroid symptoms, and always a drawn, fatigued, strained facial expression. Then the patients suffer from their own lack of sociability and spontaneous affections. There is also impotence. When the acute symptoms gradually disappear, the dreams become more like those of civilian life, and whereas the dreamer before was powerless he now begins to show fight and finally to punish the enemy. What remains, then, is a certain nervousness, a feeling of incompetence and lack of desire to return to the front.

In the conversion hysterias the fatigue is never so severe as in the anxiety states. Often there is distinct diurnal dissatisfaction, while the conflicts seen so often in the anxiety cases are rare. Then there appears a distinct wish to be wounded, to get a "Blighty one." If at this stage an accident happens, the patient finds himself after it with hysterical symptoms such as mutism, deafness, motor monoplegias, pareses, tics, spasms, contractures, tremors, gait disturbances, various forms of anesthesias, hyperesthesias, paresthesias, blindness, etc., the special form being determined often by former illnesses affecting the particular function, association with slight injuries in the region chosen by the symptoms, and the like.

The treatment may be left to the reader to look up in the original.

The reviewer also considers a most important part of MacCurdy's study his attempt to differentiate between organic and nonorganic stupor and between real concussion and the result of mental shock. He does this largely on the ground of our knowledge of organic reactions in general. For real concussion speaks—aside from focal symptoms, the possibility of blood in the spinal fluid, and the like—the fact that when, subsequent to unconsciousness for several hours and days, consciousness is regained there is a constant tendency to again "dip," that is, for consciousness again to become clouded, also distinct evidence of lowered mental tension shown in difficulty in mental operations, defective orientation, poor memory for old and especially recent events, together with aphasic tendencies. This mental tension defect may in severer cases last for a long time. It may at first be associated with a delirium.

The chapters are devoted to (1) introduction, (2) typical cases, (3) anxiety states, (4) mental make-up, (5) fatigue, (6) concussion, (7) treatment of anxiety states, (8) conversion hysterias, (9) heart neuroses, (10) general psychological considerations, and (11) prophylaxis. In a short review we can, of course, not enter into all these chapters, all of which are fully illustrated by cases (twenty-seven in all) and we must be satisfied with the short sketch of the essentials given above. The book is a most interesting and valuable study. Only one point should be added. While MacCurdy has laid his main stress on the mental side, he also, as has been shown, goes thoroughly into the evidences of actual concussion when they are present and he moreover constantly refers to evidence of endocrine disorder, which, however, he regards largely as secondary. This brings up the old quarrel of organic versus psychogenic. It seems to the reviewer that it is perhaps always better, instead of speaking of psychogenic causes, to speak of demands for psychobiologic adaptation. In these, endocrine mechanisms are naturally more or less involved. The analyses in both directions will, however, necessarily have to be carried on with a certain independence of each other until, their interdependence being clearly established, we are able to see the entire reaction as a whole.

NEUROPSYCHIATRY AND THE WAR: A Bibliography with Abstracts. Prepared by MABEL WEBSTER BROWN, Librarian, The National Committee for Mental Hygiene. Edited by FRANKWOOD E. WILLIAMS, M.D., Associate Medical Director. Also, the first supplement to the above volume published under the same auspices in October, 1918.

By the publication of the above volumes the National Committee for Mental Hygiene has placed the neuropsychiatrists of the English speaking nations very much in their debt. All the literature bearing on neuropsychiatric subjects arising out of the war has been collected and each article abstracted in detail. The contents cover Australian, British, Canadian, French, German, Italian, Netherlands and Russian literature, also the literature of the United States. In the supplement Scandinavian literature also finds a place.

The work represented is really immense and the quality of the abstract is excellent. The officers of the National Committee for Mental Hygiene, responsible for this publication, are to be congratulated.

SEALE HAYNE NEUROLOGICAL STUDIES. Edited by Arthur F. Hurst, M.A., M.D., Oxon. F.R.C.P., Major, R.A.M.C.; officer-in-charge, Seale Hayne Military Hospital, Newton Abbot. Published by Humphrey Milford, Oxford University Press. Vol. I, No. 1, July, 1918. Issued every two months. Annual subscription, 21 shillings.

This series of studies is published with the object of supplying, however inadequately, some information concerning the nature, diagnosis and treatment of war neuroses to those less fortunately placed than the staff of the hospital, and at the same time to make public the results of their scientific investigations. Sir William Osler states in an introductory note that from personal observation he can testify to the rapidity and permanence of the cures which are effected by relatively simple methods.

Contents: Studies on hysteria consisting of eight articles:

(*a*) Pharyngeal anesthesia by Hurst and Symns.

(*b*) Experimental observation on the signs and symptoms of malingering, hysteria and organic nervous diseases by Hurst.

(*c*) Narrow and spiral fields of vision in hysteria, malingering and neurasthemia by Hurst and Symns.

(*d*) The supposed association of hysterical anesthesia of the external ear with hysterical deafness by Hurst, Symns and Gainsborough.

(*e*) A new group of hysterical "stigmata" by Hurst and Symns.

(*f*) Hysterical Romberg's sign by Hurst and Wilkinson.

(*g*) The rapid cure of hysterical symptoms in soldiers by Hurst and Symns.

(*h*) War contractures—localized tetanus, a reflex disorder of hysteria by Hurst.

In the Studies on Hysteria the authors show very conclusively the action of suggestion in causing the particular objective signs and symptoms.

The rapid cure of hysterical symptoms in soldiers is performed by methods of suggestion and persuasion carried out in an atmosphere of optimism and, of course, backed up by the absolute conviction of the physician that such conditions are practically immediately curable. Major Hurst states that he now rarely uses hypnotism and only infrequently resorts to the use of electrical currents. This has been, I believe, the experience of most men interested in this line of work in military hospitals. In my personal experience I

have found the use of electricity an easy way of rapidly establishing an atmosphere of curability and when this is once established it becomes less and less necessary to resort to its use.

Major Hurst insists on what we have found to be very essential and that is that the treatment once begun should be carried to a complete successful termination at one sitting in spite possibly of the apparent fatigue of the patient and the very definite fatigue of the operator. Unless this be done many needless weeks of tiresome reeducative treatment become necessary.